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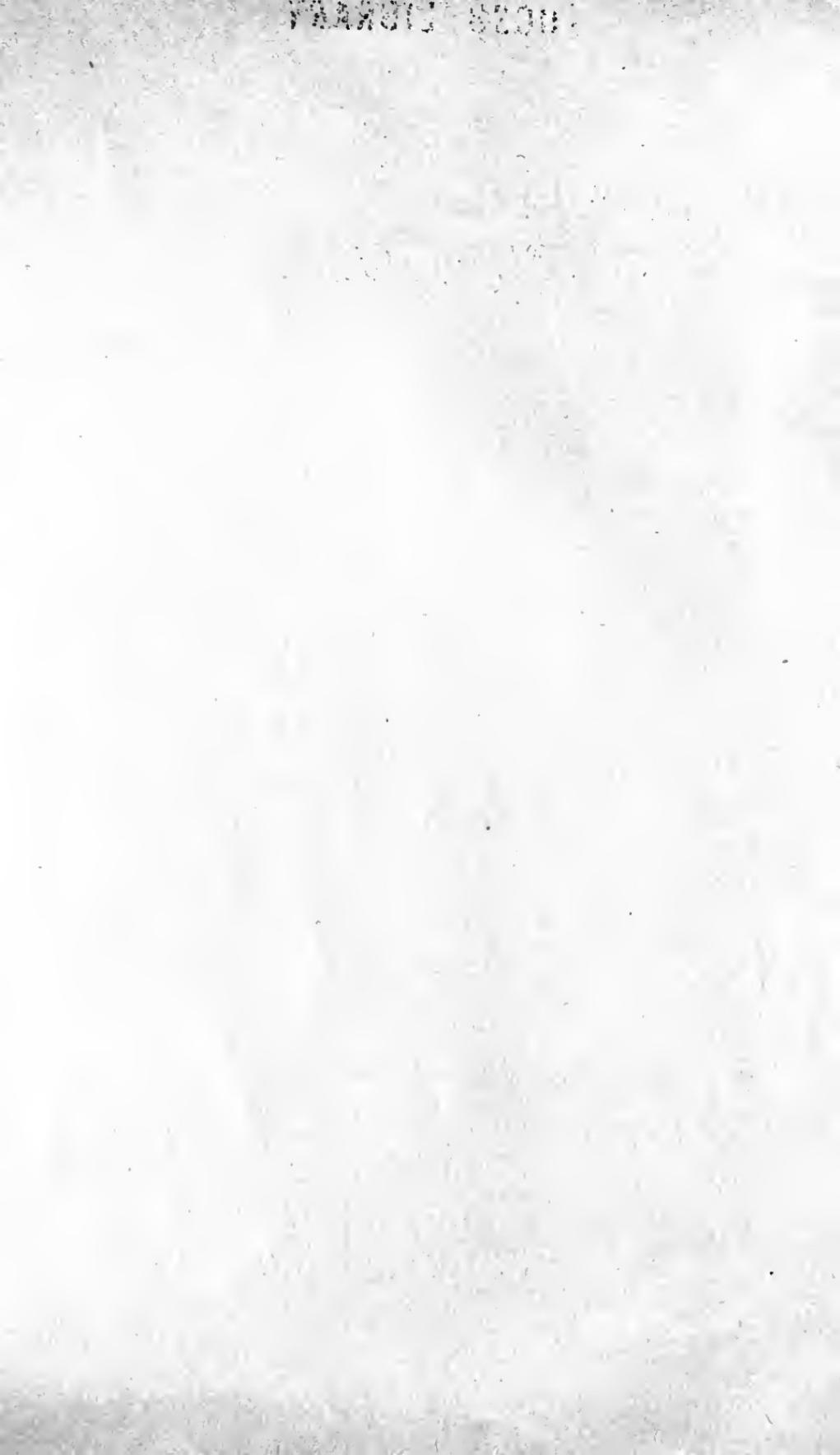
BY

GUSTAVO NIEDERLEIN

CHIEF OF THE SCIENTIFIC DEPARTMENT

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THE REPUBLIC  
OF GUATEMALA



BY

GUSTAVO NIEDERLEIN

CHIEF OF THE SCIENTIFIC DEPARTMENT OF THE PHILADELPHIA MUSEUMS

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## Introduction.

**T**HIS monograph treats of the topography, geology, mineral wealth and soils of Guatemala; it describes its climate; it details its flora and fauna with reference to their economic value; it displays the distribution of Guatemalan population according to race, wealth, communities and social conditions; it examines the agricultural development of the Republic including its live stock and forests; and, finally, it recounts the most important features of its commerce, industry, finance, and of its economic and political conditions.

It is made up of observations and studies pursued in 1897 and 1898, during seven and a half months of economic and scientific explorations in Central America, and of compilations gathered with care from authoritative manuscripts, books and official documents and publications. Respect has been shown to the work of men of originality in research and thought, and care has been taken to adhere closely to the original **text** when either quoting or translating.



# The Republic of Guatemala.

## I.

### **TOPOGRAPHY, GEOLOGY, MINERAL WEALTH AND SOILS.**

Guatemala lies between  $13^{\circ} 42'$  and  $17^{\circ} 19'$  northern latitude and between  $88^{\circ} 10'$  and  $92^{\circ} 30'$  longitude, west of Greenwich. Its area is calculated to be 50,600 square miles, or about 125,100 square kilometers. Its limits are bounded by Mexico, British Honduras, the Atlantic Ocean, State of Honduras, Salvador and the Pacific Ocean. The Atlantic coast is about 185 kilometers long and the Pacific coast 260 kilometers.

Guatemala has three great orographical zones, namely:

1. A northern zone, which is relatively low, comprising the larger part of the Department of Petén. It consists of a series of elevations abundant in cones of denudation, attaining an altitude of 400 meters on the southeast of San Felipe, and of 500 on the south of Tenosique. It is also interspersed with plains of small extent, so that it has a mountainous aspect, although there are no mountains of importance.

2. A central zone, composed of mountain ranges, running generally from west to east, and divided into chains of cretaceous and tertiary formations in the north, and chains of palæozoic and archaic formations, which begin in the Depart-

ment of Quiché, pass into Baja Verapaz and continue in the Sierras of Las Minas or del Mico.

This zone has considerable elevation, rising in Los Altos Cuchumatanes (Department of Huehuetenango) to 3,800 meters; in the mountains of Xucaneb (Department of Verapaz) 2,550 m.; in the intermediary mountains of Pocolpa, or Chama, 1,900 m.; in the mountains to the east of the Hacienda de San Vicente to 3,000 m., and in the mountains of San Gil, eastward of Izabal, to 2,000 m. All the mountains of Verapaz slope down toward the east. Only a small calcareous chain near Livingston, on the Gulf of Amatique, rises in another direction to a height of 350 meters.

3. A southern zone, formed chiefly by eruptive mountain chains, which culminate in volcanoes like those of Tacana (4,150 meters), Tajamulco (3,540 m.), Lacandon, Cerro Quemado, Santa Maria, Zuñil, San Pedro, Atitlan, Toliman, Cerro de Oro, Acatenango (3,906 m.), Fuego (4,260 m.), Agua (4,120 m.), Pacaya (basalt), Cerro Redondo (basalt), Tecuamburro, Jumaytepeque, Moyuta, Chingo, Amayo, Culma, Talmal, Suchitan (basalt), Itzetepeque (basalt), Papalcuapa (basalt), Monterico (basalt), Ipala (basalt), and Jumay. All volcanoes which are not formed of basalt are of andesite rock. This zone is generally called the Cordillera de los Andes, which runs through the country from northwest to southeast at a distance of from 50 to 80 km. from the Pacific Ocean, and has an average height of 1,950 meters.

Another division of the mountain system of Guatemala is as follows:

1. The Cordillera de los Andes, parallel with the Pacific Ocean.

2. The Sierra Madre, beginning at the volcano of Tacana and following an irregular line through the Department of Huehuetenango, Totonicapan and Alta Verapaz, and projecting through British Honduras to the Atlantic.

3. The Sierra de Chama, a range of the Sierra Madre, which passes from Verapaz in a tortuous line toward the east.

4. The Sierra de Santa Cruz, a range starting from the Sierra de Chama, following the direction of the Cahabon and

Polochic Rivers, and continuing north of Lake Izabal until it disappears at the Gulf of Amatique.

5. The Sierra de las Minas (or Mico Mountain), beginning north of Coban, running thence between the Polochic and Motagua Rivers, and south of Lake Izabal, and ending between the Bay of San Tomas and the Motagua near the Atlantic coast.

6. The Sierra de Copan, a spur of the Cordilleras, crosses the Department of Santa Rosa, passes west of the lagoon of Ayarsa, rises again toward the north, makes a curve between the city of Esquipulas and the mines of Alotepeque, and stretches to the chain of mountains which separates Guatemala from Honduras.

7. The mountains of Azulco, Conguaco and Moyuta, which form an isolated group of the Cordillera, culminating in the volcano of Tecuamburro.

The principal river flowing to the Gulf of Mexico is the Usamacinta, and its affluents are the Rio de las Salinas, Rio de la Pasion and Rio Lacandon. After receiving the San Pedro this great river takes the name of Rio Tabasco in Mexico.

To the Atlantic Ocean run the Rio Hondo and the Rio Belize. Into the Gulf of Honduras, which opens into the same ocean, empty the Rio Sarstoon and the Motagua, as well as the River Dulce, the outlet of Lake Izabal, which on its part receives the Rio Polochic.

Tributaries of the Pacific Ocean are the Rio de Paz, Rio de los Esclavos, Rio de Michatoya, Rio Guacalate, Rio Coya-late, Rio Patulul, Rio Nagualate, Rio Samala, Rio Tilapa, Rio Naranjo and Rio Suchiate. All of these have their origin in the Cordillera de los Andes or in the adjacent highlands. Only one river of all the Pacific tributaries is navigable. It is the Rio Michatoya, on which boats can ascend to its confluence with the Maria Linda.

On the other hand, the Atlantic tributaries are nearly all navigable to a certain extent, as the Rio Usumacinta, the Rio de las Salinas, also called Rio Negro above a place known as Nueve Cerros; the Rio de la Pasion from its confluence with the Rio Chajmaita; the Rio Sarstoon, which is the boundary

line between Belize and Guatemala below the rapids of Gracias á Dios; the Rio Polochic below Panzos; the Rio Motagua below Gualan, and the Rio Dulce, as well as Lake Izabal, through their entire extent.

The principal lakes are:

Izabal .....	90 km	(58 m.)	long,	20 km.	(12½ m.) wide.
Petén ó Flores..	48 "	(30 m.)	"	10 "	(6½ m.) "
Tezalculpa.....	12 "	(7½ m.)	"	11 "	(7 m.) "
Ayarza.....	12 "	(7½ m.)	"	12 "	(7½ m.) "
Atitlan.....	29 "	(18 m.)	"	11 "	(7 m.) "
Amatitlan.....	12 "	(7½ m.)	"	4 "	(2½ m.) "
Ginja .....	25 "	(12½ m.)	"	9 "	(5½ m.) "

Of these there is steam navigation on Lakes Izabal, Atitlan and Amatitlan.

The principal seaports are:

ON THE ATLANTIC.

Livingston, Puerto Barrios, Izabal and Santo Tomas.

ON THE PACIFIC.

San José, Champerico and Ocos.

The river ports are:

Iztapa, Tejocote, Gualan and Panzos.

As already indicated, a great variety of characters is shown in the geological structure of Guatemala. In the first place, the Quaternary formation (alluvium and diluvium) covers most of the Pacific coast from the foot of the mountains to the sea. The same formation is also observed around Guatemala, Chimaltenango, Chimalapa, Chiquimula, Esquipulas, Jalapa, Pinula, Puerto Barrios, La Libertad, and in the valley of the Rio de la Pasión.

The Tertiary formation, and especially limestone, covers nearly the entire Department of Petén. Besides, limestones and dolomites of the Upper Cretaceous age are observed from La Libertad and San Benito toward the Usumacinta River, and toward British Honduras, east of San Luis and Santa Barbara. The surroundings of San Luis and Santa Barbara are Tertiary limestone and sandstones of Eocene and Miocene ages.

The limestones and dolomites of the Upper Cretaceous age are also found in Alta Verapaz, in the north of Izabal and in the north of Huehuetenango, mixed with Tertiary lime-

stones and sandstones, and followed southward, first in Huehuetenango, then in the north of Quiché and in the south of Alta Verapaz, by conglomerates, dolomites and limestones of the Lower Cretaceous age, and again in the same departments further south, and in Baja Verapaz, with limestones and dolomites of the Upper Carboniferous age commingled with Santa Rosa strata (slate, sandstone, pudding stone and carboniferous graywacke), a formation which has also been found around Dolores and eastward of it toward Belen, in the Department of Petén, and again toward the north of Chiantla and toward the south of Cunen in Huehuetenango with pre-carboniferous limestone, also near Rabinal and Salamá with crystalline limestone of the Azoic age.

This Tertiary formation is followed, as already indicated in the orographical sketch, by an Azoic formation of gneiss, mica-slate and phylada, with large intrusions of granite, in the Department of Huehuetenango, Quiché, Baja Verapaz, Zacapa, the south of Izabal, in Chiquimula, Jalapa and Guatemala. Granite is further found in the north of Chicacao, around the lake and eastward of the volcano of Atitlan, between Totonicapan and Santa Cruz de Quiché, in Villamesa, Jutiapa, etc.

A kind of hornblende slate has been observed in small spots in Izabal. Around Lake Izabal and along the River Motagua and northward of it, as also southward of Quastatoya and northward of Cobulco and Rabinal, serpentine has been found.

The eruptive formations which cover the rest of Guatemala are composed of porphyry in the north of Guatemala, in the northwest of Jocotan and northwest of Zacapulas; of diorite in the southeast of Palmillo; of obsidian in the northeast of Guatemala; of rhyolite and dacite in Olopa, Jocotan, southward of Cuajiniquilapa and northeastward of Guatemala; and of trachyte, together with basalt, rhyolite, obsidian and granite in the northeast of Guatemala, northward and northwestward of Santa Cruz de Quiché, northward of Zacapulas and southward of Izabal.

The eruptive formations are further composed of basalt in the volcanoes of Pacaya, Cerro Redondo, Chingo, Suchitan,

Iztepeque, Ipala and Monterico, also around Jerez, Quezaltepeque, Ipala, Concepcion, Santa Catarina, Mita and Chiquimula; and finally, mostly of andesite in all the rest of the Cordillera and the highlands, as in Tacaná, Tejutla, San Marcos, Ostuncalco, Quezaltenango, Totonicapan, Sololá, San Lucas, Atitlan, Santa Cruz Quiché, Patzum, Patzicia, Antigua, Amatitlan, Mataesquintla, Cuajiniquilapa, Moyata, Jolotepeque, etc.

The following mineral products have been found, demonstrating that Guatemala may also have a promising future development in this line, owing to the varied geological formations just described:

*Quartz and gold* in Cobulco, Chol, Rabinal and Salama in Baja Verapaz; in Palencia, Chiquin and Sanarate in the Department of Guatemala; in Jalapa and Zacapa.

*Silver and galenas* in San Lorenzo, San Juan Sacatepequez, Chinantla, San Antonio, San Pedro Yampue and Petapa in the Department of Guatemala; in Rabinal and Cubulco in Baja Verapaz; in Chimaltenango; Jalapa; Chiquimula (Alotepeque, Concepcion and Esquimulas); Santa Rosa; Huehuetenango and Quezaltenango.

*Copper* in Chinantla, Trapiche Grande, San Buenaventura, San Juan Sacatepequez, Palencia and Sanarate in the Department of Guatemala; in Rabinal and Cubulco in Baja Verapaz; Amatitlan; Jalapa and Zacapa.

*Coal and lignite* in Chinantla, Palencia and Sanarate in Guatemala; San Martin in Chimaltenango; Santa Rosa; Jalapa; Izabal; and Cerro Gilnear, Livingston, and Coban in Alta Verapaz.

*Manganese* in Jutiapa.

*Asbestos* in Salamá and Cubulco in Baja Verapaz.

*Graphite* in Totonicapan, Huehuetenango, and in Cubulco and Rabinal in Baja Verapaz.

*Kaolin* in Pinula, Mixco, San Juan Sacatepequez, San Antonio and Chinantla in Guatemala; Amatitlan; Santa Rosa.

*Opals* in Chiquimula.

*Slate* in Salamá, San Antonio, Chiquin, and Huehuetenango.

*Alum* in Jutiapa and Huehuetenango.

## *Marble in San José de Buenavista, Salamá and Totonicapan.*

There is no doubt that regions with porphyry, trachyte, basalt, rhyolite, obsidian, gneiss, andesite and granite combined, as found north-northeastward of the city of Guatemala, around Chiquimula, Jocotan and Olopa, southward from Zacapa, northward from Quezaltepeque, around Zacapulas and Santa Magdalena, between Uspantan and San Andres, must be rich in minerals, as similar regions are in other parts of the world. Valuable mines might also be found in the Sierra de las Minas and in the Sierra de le Grita, as well as in the Sierra del Espiritu Santo.

*Soils.* The character of the soils of Guatemala are, as everywhere else, dependent on the surrounding geological formations, with reference to which the following brief list, taken from the highly interesting maps of Dr. Carlos Sapper, is given:

1. *Alluvial soils.* These are found along the Atlantic Ocean, in the lower valley of the Motagua River, in that of the Rio Dulce and in the lower part of that of the Rio Polochic, as well as in the lower region of the Rio de la Pasión and in the Salinas or Negro river.

2. *Mixed alluvial and volcanic soils.* These soils cover all the lands from the foot of the Cordillera to the Pacific Ocean, also the valley of the Motagua River from Gualán upward to Morazán, and the surroundings of Salamá, San Gerónimo, Rabinal, Cobulco, Zacapulco, Chiquimula, Jilotepeque, Pinula, Santa Catarina, Jutiapa, Esquipulas and Jalapa.

3. *Volcanic soils.* These soils cover the lands between Guatemala and Amatitlán, the surroundings of Chimaltenango and of Quezaltenango and the land south of the lake of Atitlán.

4. *Mixed eluvial and volcanic soils.* These soils predominate in the region of the volcanoes which form a long chain along the Pacific Ocean, 50 to 80 km. distant from the Cordillera de los Andes. Also the southern part of the adjacent highlands, called "Mesa central," are covered with these mixed volcanic and eluvial soils, mostly of andesite origin;

as, for instance, the lands of Tacaná, Momostenango, San Marcos, San Francisco, Totonicapan, Mazatenango, Sololá, Santa Cruz Quiché, Tecpán, Pacicia, Patulul, Antigua, San Antonio, Palencia, Sampaquisoy, Mataquescuintla, Barberena, Cuajiniquilapa, Chiquimulilla, Jalpatagua, Comapa and Yupiltepeque.

5. *Changed or replaced soils.* These soils of different geological origin are found in the northern part of the "Mesa Central," in a long strip, bounded by Momostenango, San José, San Antonio, Jalapa and Santa Catarina toward the south; and Quilco, Huehuetenango, Uspanton, San Cristobal and the foothills of the Sierra de las Minas toward the north. Besides the already named municipalities, the following have the same soil: San Martin, Jogabaj, Canoas, Sanarate, Guastatoya, Jocotan, Gualan and Palmillo.

6. *Laterite clay.* This heavy soil predominates in the high regions, especially in the Sierra Madre ó Altos Cuchumatanas, around the municipalities of San Mateo, Santa Eulalia, Salamá, Ixcoy, Todos Santos, Nebaj, Chajut, Cozal, Cunen, Uspantan and Chicanan.

7. *Laterite in decomposition.* This reddish soil is found in the Sierras de las Minas, del Mico, de la Grita and Espiritu Santo, and in Merendon; also in the mountains north of Lake Izabal, around Olapa, Coyanté, Teleman, and north of Santa Cruz de Quiché.

8. *Laterite residua.* Nearly all the Department of Petén is covered with this fertile soil, as is also a great part of the Departments of Izabal, Alta Verapaz and Huehuetenango in the north.

9. *Laterite in transformation.* This soil is found in spots in the mountains of Chamas and Santa Cruz, in the region of the Sarstoon and Pasión Rivers, around Lanquin, Cahabon, San Luis and Dolores in Petén.

## II.

### CLIMATE.

The people of Guatemala distinguish three zones, called *Tierra caliente* (hot region), *Tierra templada* (temperate region) and *Tierra fria* (cold region), and two seasons, the moist or humid, called *invierno* or winter, and a dry one, called *verano* or summer.

*The tierra caliente* comprises the coast lands of the Atlantic and Pacific Oceans.

*The tierra templada*, or temperate zone, is found on the highlands or *mesetas centrales*, from 2,000 to 5,000 feet above the sea level.

*The tierra fria*, or cold zone, is situated above the elevation of 5,000 feet, and especially in the Departments of Sololá, Totonicapan, Quiché, Huehuetenango, Quezaltenango and San Marcos, regions known under the name of Los Altos.

*The rainy season* begins in May and lasts until October in the interior, and until December along the coasts.

*The hottest months* are March and April, the *coldest* December and January.

Going more into details, Guatemala lies entirely in the torrid zone. Stretched out between two oceans not far from each other, the climate would be uniformly hot and moist but for her varied mountains, especially the Cordilleras de los Andes, which oppose themselves to the prevailing winds, causing notable differences not only in temperature, but also in rain-

falls, humidity of the air, clouds and other meteorological phenomena.

The predominant winds are from the east and north. Only along the Pacific coast and on the southern slopes of the southern Cordillera southern and southwestern winds are frequent at certain times of the year. But it is also true that the different mountains often modify locally the direction of the winds.

The curves of atmospheric pressure are very slight. As in the territory of Guatemala the sun passes twice a year to the zenith of each locality, so the temperature is higher at those times (April, May and August) than in the intermediary periods (July, December and January). The daily course of temperature is generally simple, although clouds and winds cause irregularities. The minimum is observed at sunrise and the maximum between two and three o'clock in the afternoon.

Dr. Carlos Sapper gives the following table of average centigrade temperatures:

	Height above the sea..	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Puerto Barrios...	2 m.	23½	24	24½	26½	27½	29½	26½	26½	26½	27	26½	23½
Salamá.....	920 "	20	21	23½	24½	25½	25½	24½	24½	24	21½	21½	20½
Campur.....	980 "	17½	19½	19½	21½	23	22	21	20½	20½	20½	18½	16½
Chimax.....	1,306 "	16½	16½	18½	19½	20	19½	19½	19½	20½	18½	16½	16
Guatemala.....	1,485 "	16	17½	18½	19½	19½	19	18½	18½	18½	18	16½	16½
Quezaltenango ..	2,350 "	10½	11½	12½	15½	17	16½	16	15½	16½	15½	14½	12

Dr. Sapper estimates that for each 100 meters of elevation the temperature is diminished by one-half of a centigrade degree. Naturally, clouds, rainfalls and high winds modify the regularity of temperature.

The atmospheric humidity is high all over the country, except in the dry regions situated between humid or moist mountains, as, for instance, in Salamá and in the valley of the Motagua River. Its maximum is about sunrise, and the minimum between two and three o'clock in the afternoon, depending upon the temperature. Electric phenomena, the direction of the winds and also the vegetation sensibly modify the saturation of the air. Thunderstorms are frequent from May to

September, but seldom occur during other parts of the year. They come on mostly in the afternoon between half-past two and half-past six o'clock.

In regard to rainfall, it is a general rule that regions confronting moist winds from the ocean have an abundant precipitation, and that regions defended by mountain ranges from the incursion of sea winds are dry. Guatemala, having a complicated topographical configuration, has for this reason great varieties of rainfall in different parts of the country.

Nearly all the curves of rainfall present two maxima, both occurring a little after the sun has passed the zenith of each locality—that is, in June or July and in September. Some places in the north show a third maximum, and other places, such as Senahú, only one, which comes in August.

Dr. Sapper observed in Alta Verapaz and along the Atlantic coast a considerable rainfall distributed throughout the year, a little heavier in October and December, and less from January to April. In Los Altos, known as Costa Cuca, he found the rainfall very heavy, and occurring mostly from April to October.

Further north, in Quezaltenango and in Salamá, he observed less precipitation, and it occurred mostly from May to September. After that time there followed a long dry season.

In the City of Guatemala and surrounding highlands he noted a dry season quite as long and as well pronounced, but the total amount of rainfall was considerably larger, the moist winds from the Pacific having freer access to these localities.

More particulars are found in the following table of average rainfall in millimeters for different regions:

	Height above the sea,	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Puerto Barrios....	2 m.	140	155	85	155	169	320	500	490	280	160	430	240
Cubilguitz.....	200 "	180	210	125	70	260	380	520	300	510	590	400	280
Setal .....	720 "	470	300	270	70	300	520	620	500	430	620	330	420
Salamá.....	920 "	0	0	0	9	90	180	110	70	110	20	60	0
Senahú .....	980 "	130	100	80	105	500	620	800	580	450	360	160	115
Las Mercedes.....	1,000 "	35	60	100	215	445	560	470	560	540	480	135	60
Chimax.....	1,306 "	140	110	100	60	230	320	310	210	240	250	210	170
Guatemala.....	1,485 "	10	8	5	20	75	140	280	275	225	225	180	15
Quezaltenango....	2,350 "	0	0	0	5	90	160	100	75	120	75	20	10

Hail seldom falls in the Republic of Guatemala; frosts have been observed only in regions above 1,800 meters elevation, and snow has only been seen in regions above 3,100 meters. The climate, taken all in all, is healthy. Fevers are confined to the coast lands, which are very warm and moist.

### III.

#### CHARACTER OF VEGETATION.

The vegetation of Guatemala, as Mr. Hemsley says, is probably as varied as that of Southern Mexico, but there are no large desert tracts, as in Northern Mexico.

The main mountain chain is an extension of that of Chiapas, Mexico, and attains its greatest elevation in Quezaltenango, Chimaltenango and Guatemala, where it consists of upland plains stretching away to the north, surrounded by high hills and with the outline broken on the Pacific side by volcanoes. These highland plains are, for the most part, comparatively free from the denser growth of trees, and are, where not under cultivation, covered with grass upon which sheep and cattle graze. The surrounding hills are clothed with pines and oaks to an elevation of 10,000 to 11,000 feet, but they are mostly of low growth.

A dense forest covers the slopes of the Cordillera toward the Pacific from an elevation of from 5,000 to 6,000 feet, and this blends with the lowland forests, which are denser and less broken at the foot of the Cordillera, but toward the ocean shore they are interspersed with palms and other trees, or with open stretches of rank grass.

A long, narrow mountain ridge leaves the Cordillera not far from Totonicapan, and at first forms the watershed between the Rio Negro (Chisoy or Salinas) and Motagua.

Then it divides, one branch separating the Motagua and

the Polochic valleys, the other the Polochic and the waters of the Rio Negro or Salinas and the Rio de La Pasión.

The upper part of the valley of Motagua consists of plains covered chiefly with oaks and pines, the former loaded with orchids and *Bromeliaceæ* (including *Tillandsia usneoides*).

Lower down the valley contracts, and its sides are covered with a shrubby forest mingled with pines, but the higher slopes are clothed with oaks, which are also loaded with *Tillandsia* and orchids, such as *Oncidium*, *Epidendrum*, *Pleurothallis* and others.

The hills then recede, and the valley expands into open and comparatively barren plains covered with *Mimosæ* and *Cacti*.

This vegetation is again succeeded rather suddenly between Zacapa and Gualán by rich virgin forests, and these continue to the Atlantic.

The valleys of the Polochic and Cahabón Rivers take their rise in Alta Verapaz, in a rainy district covered with dense vegetation, a large portion of which is under cultivation. The ancient forests have for the most part given place to a second growth of woods, which are cut and burnt from time to time for plantations of Indian corn, sugar, coffee, etc.

In these valleys are also patches of fine forests, occupying the spurs of the chains of mountains bounding and dividing the valleys on either side.

In the neighborhood of Cahabón the vegetation is more scanty, and open grassy plains occur.

A few leagues above the junction of the Polochic and Cahabón Rivers, between Teleman and Panzós, the virgin forest is entered, and this, as in the Motagua valley, continues to the sea, covering the whole country around Lake Izabal and along the banks of the Rio Dulce.

The high ridge bounding the valley of the Cahabón on the north is clothed with virgin forests nearly to its summit, and these spread continuously northward without interruption to the borders of the Department of Petén. Pine clad ridges form the divides between the rivers.

Perhaps the largest unbroken forest in the whole of Guatemala extends from northern Alta Verapaz into Petén.

In order to give some idea of the phyto-geographical range of vegetation, let us observe the highest volcanoes, the Volcan de Fuego (4,260 m.) and the Volcan de Agua (4,120 m.) as types. Mr. Hemsley, whose very trustworthy description is here reproduced, and which accords with the author's own observation, says of the Volcan de Agua that its peak is clothed with grass and a few pines, together with the Alpine shrubs, *vaccineæ*, *lupinus*, etc.; while the top of the Volcan de Fuego is nearly barren, a few ferns, lycopods, etc., only having fixed themselves in the crevices of rocks.

Lower down on both volcanoes the pine trees become larger and more numerous, but entirely cease at an elevation of 10,200 feet, giving place to a dense mixed forest. Large evergreen oaks are prevalent at an elevation of from 7,000 to 8,000 feet. From this altitude down the virgin forest has been destroyed, to be succeeded by sugar fields and Indian corn patches, and still further down by coffee plantations interspersed among woods of second growth.

In order to characterize the vegetation of the Republic of Guatemala in a few words, we may distinguish with Dr. Sapper :

1. *Litoral forests* in a narrow belt along the Pacific and Atlantic coast.
2. *Moist or humid forests of the tierra caliente* (hot zone) *mixed with savannas* (prairie fields) which cover all the plains from the foot of the Cordillera de los Andes to the Pacific Ocean.
3. *Moist or humid forests of the tierra caliente* (hot zone) and *tierra templada* (temperate zone), found along the foothills of the volcanic chain of the Cordillera de los Andes, and in the northern and eastern part of the Republic of Guatemala, as described above.
4. *Moist or humid forests of the tierra fria* (cold zone), predominating in the Altos Cuchumatanes.
5. *Pinares and robleres* (pine and oak forests), of the *tierra caliente*, *tierra templada* and *tierra fria*, found in the upland plains (mesetas centrales), covering considerable expanses and mixed with :

6. *Savannas with Chaparrales* (small trees and bushes of *Mimosacae*, *Euphorbiaceae*, etc.), characteristic of the upland plains and dry regions.

7. *Savannas with pines*, along the Golfo Dulce (Atlantic coast lands).

8. *Savannas of the tierra fria*, on the highest table-lands of the mountains.

The vegetation of Guatemala is very rich in economic plants. My list of woods exceeds the number of 400 different species; 339 are contained in my list of medicinal plants. There are 7 different kinds of rubber trees, about a dozen fibre plants, over 50 gums and resins, a great number of tanning and dye woods, a very great number of fruit trees, many oil plants, 1 wax plant (*Virola sebifera* *Aubl.*), numerous aromatic and perfume producing plants, spices, balsams, starch yielding roots, etc.

Among the woods figure in first place the caoba (*Swietenia Mahagoni L.*), cedro (*Cedrela odorata L.*), guayacan (*Guayacum officinale L.*), mora (*Chlorophora tinctoria L. Gaud.*), guachipilin (*Pithecellobium*), ronron (*Parinarium guianensis*), madre cacao (*Gliricidea*), ebano (*Brya ebenus L. [DC.]*), laurel (*Nectandra*), cortez (*Tabebuia Donnel Smithia Rose*), chico zapote (*Achras zapote L.*), balsamo (*Myroxylon*), cipres (*Cupressus*), cedro blanco (*Bursera*), cenisero (*Pithecellobium Saman Benth.*), culebro (*Terminalia*), encino (*Quercus*), guajo (*Leucaena esculenta Benth.*), guanacaste (*Enterolobium cyclocarpum Gr.*), iscanal (*Mimosa, sp.*), mangle (*Rhizophorâ Mangle L.*), nacascalote (*Caesalpinia coriaria Willd.*), palo jote (*Bursera Simaruba (L.) Sarg.*), pino blanco (*Abies religiosa Linden*), also called pinabete, pino colorado (*Pinus*), roble (*Quercus*), tasisco (*Perymenium Turckheimii Klatt.*), taray (*Eysenhardtia amorphoides H. B. K.*), tepeguaje (*Lysiloma acapulcensis Benth.*), zapotillo (*Vitellaria mammosa (L.) Radlk.*), etc.

These medicinal plants take a first rank:

Zarzparilla (*Smilax officinalis, L.*), guaco (*Aristolochia*), quina (*Cinchona*), michoacan (*Exogonium Purga (Wender) Benth.*), liquidambar (*Liquidambar macrophylla Oerst.*), té de limon (*Andropogon*), copalchi (*Croton niveus Jacq.*), calagula (*Polyodium*), contrayerba (*Dorstenia Contrayerba L.*), cascara-

rella (*Croton flavens* L.), copal (*Tetragastris balsamifera* (Sw.) O. Ktze.), doradilla (*Adiantum*), etc.

The principal rubber tree is the *Castilloa elastica* Cerv., locally called "hule." Other milk producing trees are a number of *Ficus*, as the amate, mastate, higuera, etc., a number of *Euphorbiaceæ*, *Apocynaceæ*, *Asclepiadaceæ*, *Sapotaceæ* and species of *Brosimum* (milk tree), *Artocarpus* (bread tree), *Carica* (melon tree), *Hura*, etc.

The most important fibre plants are: the *Carludovica palmata* Ruiz et Pav., of the leaves of which the so-called Panama hats are made, the palma real (*Oreodoxa oleracea* Mart.), also used for hats, the fibres of coyol (*Acrocomia vini-fera* Oerst.), maguey and henequen (*Agave*), pita floja (*Fourcroya gigantea* Vent.), piñuela (*Bromelia pinguin* L.), escobilla (*Abutilon indicum* Sw.), silk, cottons (*Bombax Ceiba* and *Ochroma agopous*), white and brown cottons (*Gossypium barbadense*), bast (*Castilloa elastica*, Cerd.; *Guazuma ulmifolia* Lam.), etc.

Among the balsams, gums and resins are prominent the balsams of *Liquidambar macrophylla* Oerst., *Myroxylon* sp., the resins and turpentines of pines (*Pinus*), the gums of cachito (*Acacia Farnesiana* Willd.), icanal (*Mimosa*), espino blanco (*Prosopis*), guanacaste (*Enterolobium cyclocarpum* Gr.), the resins of copinol or guapinol (*Hymenaea courbaril* L.), cedro (*Bursera*), jiote (*Bursera simaruba* (L.) Sarg.), jocote (*Spondias dulcis* Forsk.), jobo (*Spondias lutea* L.), mangle (*Rhizophora Mangle* L.), guacacan (*Guajacum officinale* L.), espino negro (*Acacia* sp.), etc.

The best tannings are the barks of encina and roble (species of *Quercus*), mangle (*Rhizophora Mangle* L.), guanacaste (*Enterolobium cyclocarpum* Grisb.), and the fruits of ñacascolote (*Caesalpinia coriaria* Willd.).

Tinctorial plants are, in the first place, the indigo or añil (*Indigofera anil* L.), then the achiote (*Bixa orellena* L.), the camotillo (*Curcuma longa* Roxb.), the wood of campeche (*Hematoxylon campechianum* L.), of brazil (*Caesalpinia* sp.), of mora (*Chlorophora tinctoria*), sacatinta (*Dicliptera Vahliana* Nees.), the fruits of ñacascolote (*Caesalpinia coriaria* Willd.), etc.

Among the oil fruits and oil seeds may be mentioned the

corozo (*Attalea cohune Mart.*), the coyol (*Acrocomia vinifera Mart.*), coco (*Cocos nucifera*), and the cultivated seeds of *Ricinus communis L.*, *Arachis hypogaea L.*, *Jatropha curcas L.*, *Sesamum indicum L.*, *Linum usitatissimum L.*, *Brassica oleracea L.*, etc.

Fruit trees and plants are the orange, lemon and other species of *Citrus*, the aguacate (*Persea gratissima L.*), the anona (*Anona squamosa L.*, *Anona reticulata L.*), the chirimoya (*Anona cherimolia Mill.*), the chico zapote (*Achras sapota L.*), guanava or guanava (*Anona muricata L.*), mamey (*Mammea americana L.*), Mango (*Mangifera indica L.*), marañon (*Anacardium occidentale L.*), jocote (*Spondias*), Mañzana de Rosa (*Jambosa Caryophyllus* (*Spr. Ndz.*)), cainito (*Chrysophyllum cainito L.*), guayaba (*Psidium guayava Raddi*), icaco (*Chrysobalanus icaco L.*), sonsapote (*Mangifera indica L.*), palo de pan (*Artocarpus incisa L.*), higo (*Ficus carica L.*), papaya (*Carica papaya L.*), nance (*Malpighia parvifolia A. Juss.*), coco (*Cocos nucifera L.*), cacao (*Theobroma Cacao L.*), granadilla (*Passiflora sp.*), etc., not counting a variety of bananas (*Musa*) and other cultivated plants, like pine apples, coffee, etc.

The best aromatic plant is the vanilla (*Vanilla planifolia, Andr.*), but there are a very great number of aromatic barks (like canelo, palo de anis, balsamo), aromatic woods, aromatic flowers, aromatic seeds, etc., as well as all kinds of spices.

The principal roots or tubers are the yucca (*Manihot aipi, Pohl.*), the ñame (*Dioscorea alata L.*), camote ó batata dulce (*Ipomoea batatas Lam.*, or sweet potato), el quiquisque (*Colocasia antiquorum Schott.*) and the potato (*Solanum tuberosum L.*).

Nearly every plant can be cultivated in the territory of Guatemala, but as all the plants depend upon a certain average temperature, the following list is given of the altitudes and centigrade temperatures suited to the more important commercial plants:

Name.	Altitude in Meters.	Average Temperature.		
Coffee .....	300 to 1550-1800	Tierra caliente, 23°-26°C.	Tierra templada, 17°-23°C.	
Cacao .....	0 " 500- 900	"	.....	
Rubber or hule .....	0 " 400	"	"	
Cocoamón .....	0 " 1200	"	"	
Indigo or añañil .....	0 " 700	"	"	
Rice .....	0 " 1000	"	"	
Corozo ( <i>Attalea cohune</i> )	0 " 600	"	.....	
Caoba and cedro .....	0 " 800	"	"	
Liquidambar .....	800 " 1900	"	"	
Chicosapote .....	0 " 900	"	"	
Oreodoxa oleareea .....	0 " 1200	"	"	
Guayabo .....	0 " 1700	"	"	
Coyol (palm) .....	0 " 1800	"	"	
Chili ( <i>Capsicum</i> ) .....	0 " 1700	"	"	
Sugar cane .....	0 " 1600-1900	"		Tierra fria inferior, 10°-17°C.
Cotton .....	0 " 1400	"	.....	
Ananás (pine apple) .....	0 " 1400	"	.....	
Tobacco .....	0 " 1800	"	.....	
Yucca ( <i>Manihot aipi</i> <i>Pohl</i> ) .....	0 " 1900	"	"	
Banana ( <i>Musa</i> ) .....	0 " 1900	"	"	
Aguacate ( <i>Persea</i> ) .....	0 " 1950	"	"	
Oranges .....	0 " 2100	"	"	
Peaches .....	1300 " 2450	.....	"	
Apples .....	1800 " 2500	.....	.....	
Barley .....	1450 " 3000	.....	"	
Beans .....	0 " 3000	"	"	
Indian corn .....	0 " 3100	"	"	
Potatoes .....	0 " 3100	"	"	
Wheat .....	1800 " 3150	.....	.....	
Maguey ( <i>Agave</i> ) .....	0 " 3400	"	"	Tierra fria, 10°C.
Pinabete ( <i>Abies religiosa</i> ) .....	2400 " 3500	.....	.....	"
Isolated dicotyledonous trees .....	3600	.....	.....	"
Coniferous forests and vacciniae .....	3800	.....	.....	"
Isolated pines .....	4000	.....	.....	"

The following pages give a complete list of the native names of the woods and medicinal plants.

#### Native Names of the Woods of Guatemala.

Abeto.	Aulson.	Beyoton.
Acaal.	Anouo.	Bilin.
Acacia.	Ansul.	Bits.
Aceituno.	Aralum.	Bojon.
Aguacate.	Aripin.	Bolador.
Aguacate cimarron.	Aripin colorado.	Brazil.
Aguacate de mico.	Aripin negro.	Bramon.
Alamo.	Arrayan.	Bronzou ó jobillo.
Algodón.	Asta.	Bucute.
Algodoncillo.	Ausup.	Buenté.
Alliso.	Aya.	Buluché.
Alliso blanco.	Bache.	Burlon.
Alliso colorado.	Bacutzun.	Cabahue or calahue.
Almendro.	Balsamo.	Cabo de hacha.
Ama.	Baquelman.	Cabos.
Amate.	Bejuco de cruz.	Cacao.
Awate blanco.		

Native Names of Woods of Guatemala—Continued.

Cacho.	Chilimate.	Espino jolute.
Cachilote.	Chile.	Estoraque.
Cacho de venado.	Chilindron.	Eucalypto.
Cacoc.	Chilique blanco.	
Caimito.	Chilonché.	
Caimito cimarron.	Chimon.	Flor blanca.
Caj.	Chinacté.	Flor mata.
Cajetillo.	Chintoc.	Frijol.
Cajeto.	Chintoox blanco.	Fruta de cabro.
Cajon.	Chipilin.	Fustic.
Cagagnance.	Chiñey.	
Calagua.	Chochoe.	Gamusa.
Calote.	Chocon.	Gorda.
Canaje.	Choloté.	Gramian.
Camasul.	Chouilll.	Granadillo.
Camello.	Chontat.	Guachipilin.
Camey.	Chonte.	Guachipilin de montaña.
Campanillo.	Chorreado.	Guachipilin de zope.
Canac.	Chucou or Chocon.	Guacimo.
Cañafistola.	Chueen.	Guaco.
Canal.	Chuite.	Guacuco.
Canasté.	Cipres.	Guaje or Guaj.
Canellilo.	Cupulpon.	Guajilote.
Candelillo.	Ciracil.	Guama.
Canelo.	Circote.	Guanacaste.
Canjan or canxan or canshan.	Clya.	Guapinol.
Canoj.	Clusero.	Guarumo.
Canté.	Cocomatillo.	Guayabillo.
Canton ron.	Cocoyol.	Guayabillo del monte.
Cantote.	Coj.	Guayacan.
Caoba.	Cola de Muerta.	Guayacanillo.
Capaton.	Cola de Nabo.	Guavavo.
Capeta.	Cola de pavo.	Guelleño.
Capote.	Colay.	Guicicil.
Capoton.	Copalchi.	Guchila.
Capulin.	Comaste.	Guilihuiste.
Caré.	Conac.	Guilon.
Carezo.	Copac.	Guite.
Carreto.	Copal de zope.	
Carreto chino.	Copo copinol.	Hamacovo.
Cascamite.	Cordocillo.	Higo.
Castaño.	Corona.	Ilamo.
Catecay.	Corozo.	Hochochinol.
Cedazo.	Cortez.	Hormiglo.
Cedrillo.	Corteza blanco.	Hormiguillo.
Cedro blanco.	Corteza de tierra fria.	Huanacaste.
Cedro de la costa.	Corteza negra.	Huacml.
Cedro de montaña.	Croton.	Huano.
Cedron.	Cruzeto.	Huco.
Cenicero.	Cualius.	Huesito.
Cerezo.	Cuapinol.	Huilacue.
Chacaj.	Cueruch.	Huilihuiste.
Chacole.	Cuduch.	Huisisil.
Chacanche.	Culan.	Huite.
Chactecoc.	Culebro.	Hulton.
Chalum.	Cumuseuh.	Hule.
Chalteco.	Curaña.	
Champac.	Duramo.	Iean.
Chanupo.	Durazno.	Ilamo.
Chaparro.	Duraznillo.	Ilamo blanco.
Chaperno.	Duruchal.	Ilamo colorado.
Chaperno blanco.		Ilamo macho.
Chote.	Ebano.	Ilamo terno.
Chatermo.	Ebano del monte.	Iquiché.
Chattermuch.	Ectis.	Irayol.
Checken.	Encino.	Iscamal.
Chichlpote.	Encino blanco.	Ixguaché.
Chichique.	Encino colorado.	Ixlan.
Chickarro.	Encino negro.	
Chico.	Escobo.	Jabillo.
Chico de montaña.	Escobillo.	Jabin.
Chico zapote.		Jabonelllo.

Native Names of Woods of Guatemala—Continued.

Jalteyupe.	Mitllisque.	Pich.
Jesmo.	Morillo.	P'erata.
Jicaro.	Mora.	P'ixoy.
Jil.	Moracarey.	P'lehol.
Jiote.	Mora clavo.	Plomillo.
Jobo.	Mora espino.	Plumejillo.
Jobillo or bronzon.	Mora cashú.	Pleinillo.
Jocote.	Moral.	Poshté.
Jocote dulce.	Morro.	Puxché.
Jocote de fralle.	Moracaray.	Puntero.
Jocote de mico.	Mosote.	
Jocotin.	Muxié.	Quiebrahacha.
Jejonite.	Mulato.	Quita canisas.
Jolol.	Muyloco.	Quina roja.
Jubu.		Quina.
Jubun.	Nabá.	Quijioceil.
Juju.	Nance.	Quinocché.
Jupuyulo.	Navanché.	
Jusisco.	Naranjo.	Ralxchec.
Kanté.	Nacascalote.	Rayan.
Kogl.	Naranjillo.	Retamo de castilla.
Lagarto.	Napotuite.	Retamo silvestre.
Laurel.	Nispero.	Roble amargo.
Laurel mensado.	Niquidala.	Roble.
Lanelillo.	Nuez.	Roble negro.
Leche amarillo.	Oeanté.	Roble alazán.
Leche de marla.	Oeansin.	Roble de montaña.
Leche blanco.	Oeancoj.	Roble de tierra cal-
Leche de vaca.	Oconsaguil.	lente.
Lechny.	Olivo.	Roble blanco.
Limache.	Olijuche.	Ronron.
Limon.	Omaiate.	Rosa.
Limonsillo.	Ontzú.	Roman.
Limpladientes.	Palahuite.	Robleto.
Liquidambar.	Palo Jioite.	Sacricoy.
Llaje.	Palo de taray.	Sagsé or sacslé.
Llema de huevo.	Palo de matábuey.	Saceac.
Luin.	Palo de zorro.	Saro.
Lunelillo.	Palo de matazano.	Sacmoshi.
Madre caoba.	Palo gare.	Sapuyul.
Madre cacao.	Palo cortez.	Sangquiché.
Madre cabé.	Palo brasil.	Sare negro.
Madre flecha.	Palo de uva.	Sare espino.
Maninao.	Palo zapotillo.	Sabacché.
Matilisquate.	Palo de poro.	Salvia santa.
Maca de gallo.	Palo mata.	Salvia silvestre.
Macaguite.	Palo de jaboncillo.	Sangre de drago.
Madroncillo.	Palo guayabililita.	Santa maría.
Madron.	Palo blanco.	Salaino.
Madroño.	Palo inulato.	Salan.
Mamey.	Palo lagarto.	Sacuche.
Mangle.	Palo de la vida.	Sal de venado.
Mario.	Paezimon.	Sacalasque.
Marillo.	I'atas.	Saca sangre.
Malacute.	Fatan.	Saját.
Matasano.	Paste de mico.	Sauco.
Manchador.	Pasak.	Sauce.
Machinche.	Panhul.	Sacnayún.
Maray.	Panté.	Samo.
Majo de costa.	Paraiso.	Sapote.
Majagua.	Patastillo.	Sapote elmarron.
Mano de leon.	Pas de alvez,	Sebo verde.
Macuelliz.	Peíne.	Shuhync.
Manchich.	Pellejo.	Shagnay.
Manax.	Picarrromorro.	Siquilla.
Malerillo.	Pino.	Sinicche.
Manzano.	Pinabete.	Simunté.
Membrillo.	Pimienta silvestre.	Sojchaj.
Mescal.	Pimiento.	Sosnl.
Melocoton.	Pij.	Sumaque.
		Supicay.
		Sumante.

**Native Names of Woods of Guatemala—Continued.**

Suquinay.	Toxok.	Yaxjabin.
Suj.	Toncoutin.	Yajé.
Tapaiguacamayo.	Tontal.	Yaxnic.
Tacamatillo.	Tripa de coyote.	Yaxman.
Tabla.	Tripa de leon.	Yesmo.
Taje.	Trompillo.	Yupoc.
Tamarindo.	Tuayacan.	Yulbac.
Tapalcuite.	Tzalan.	Yupe.
Tamarindillo.	Uea.	Yxgualame.
Tatascamite.	Ujacamic.	Yush.
Tasisco or taxixeon.	Ujuste colorado.	Zacaton.
Tashiste.	Ujuste blanco.	Zapotou.
Taray negro.	Uná de gato.	Zapotillo.
Tapiloco.	Upay.	Zapotillo de mico.
Tan.	Uvito.	Zapote.
Tatan.	Urutay.	Zapote de mico.
Tarnay.	Vacutzun.	Zapote de montaña.
Tapaljocote.	Vainilla.	Zapiloco.
Tempiste.	Vara.	Zapoyulo.
Tepecedro.	Varilla.	Ziglyá.
Tepechuel.	Volador.	Zope.
Testal.	Xilil.	Zozin.
Tepeguaje.		Zopilote.
Testé.	Yaj.	Zom or zon.
Tinte.	Yajillo.	Zulunte.
Tijté.	Yax-ek.	Zucté.
Tontolo.		Zulul.
Torany.		

**Medicinal Plants of Guatemala.**

Achiote.	Caché.	Contrayerba.
Aguacate de mico.	Caña de cristo.	Cou.
Altamisa.	Camote.	Coute.
Alcótan.	Capulin (ralz).	Corteza de balsamo.
Algodon ixaco.	Capulin (corteza).	Corteza de copalchi.
Algodon blanco.	Calaguala (polypod).	Corteza de copal.
Algodon de corcho.	Camotillo.	Corteza de caulote.
Algodon de celba.	Calague.	Corteza de cascarrilla.
Alucema.	Carnero.	Corteza de guanacaste.
Almolonga.	Caparroza.	Corteza de grana-
Anil.	Cacao.	dillo.
Arnica.	Canjul.	Corteza de quina.
Arrayan.	Caulote.	Corteza de quebra-
Barba de viejo.	Cascarilla.	bacha.
Balsamo.	Canutillo.	Corteza de sasafraz.
Barbasco.	Camelia.	Corteza de sare
Bejuco de cruz.	Capetanejo.	negro.
Bejuco de dul.	Cera vegetal.	Corteza de yaje.
Bejuco de guaco.	Ceiba.	Corteza de duruché.
Bejuco de lpeca-	Cinco negrillos.	Corteza de chichipe.
cuanha.	Cebollin.	Corteza de guaya-
Bejuco de barba de	Cinchona.	can.
viejo.	Chuchipate.	Corteza de nispero.
Bejuco de meona.	Chuehupo.	Corteza de muorro.
Bejuco de subiu.	Cbilquiquites.	Corteza de orotoguaj.
Birrin.	Chichique.	
Birrlnaque.	Chichujuia.	
Bomino cimarron.	Chicorla.	
Borraja.	Chivato.	
Bretonica.	Corallillo.	Corteza de palo
		jote.

### Medicinal Plants of Guatemala—Continued.

Corteza de cinchona.	Hojas de solojaj.	P'anquill.
Corteza de liquidambar.	Hojas de laurel.	Paraiso.
Corteza de matilis-guate.	Hojas de tostonera.	Palo de jiolete.
Corteza de pimiento.	Hojas de conejo.	Palo de cruz.
Corozo.	Hojas de upay.	Palo de la vida.
Coroncho.	Hojas de ruda.	Poro (yerba).
Corcho.	Hojas de yerba cul-ebra.	Pez del mico.
Copalchil.	Hojas de santísima trinidad.	Pimienta.
Copal.	Hojas de chilchujin.	Plñon.
Culantro.	Hojas de santé.	Quina.
Culantrillo.	Hojas de zorro.	Qulebrahacha.
Culebra.	Hojas de limon.	Ruda.
Cuatro binojos.	Hoja aromatica.	Rabia.
Cresta de gallo.	Hoja canjui.	Ruibarbo.
Cuculmeca.	Higuera (hojas).	Raiz de poleo.
Doradilla.	Hicaque.	Raiz de sutio.
Doradilla ( <i>adlan-thum</i> ).	Huenon.	Raiz de con.
Protoguajaj.	Incienso de monte.	Raiz de gengibrillo.
Drago.	Ipecacuanha (bejuco).	Raiz de jicamo.
Dul.	Ixaco.	Raiz de gengibre.
Duruché.	Jamaica.	Raiz de hicaque.
Escoba.	Jalapa.	Raiz de orozuz.
Escobilla.	Jicamo.	Raiz de borraja.
Escobilla blanca.	Jenjibrillo.	Raiz de mechoacan.
Escorzonera.	Lava plato.	Raiz de escorzonera.
Flor doradilla.	Limon.	Raiz de panquil.
Flor de hoja de conejo.	Loro.	Raiz de zarzaparrilla.
Flor de mulatilla.	Laurel.	Raiz de canutillo.
Flor de muerto.	Liantén.	Raiz de granadillo.
Flor de manzanilla.	Liquidambar.	Raiz de capulin.
Flor de orejuela.	Mapabuita.	Raiz de almolina.
Flor de sintus.	Mulatilla.	Raiz de camotillo.
Flor de coroncho.	Manlas.	Raiz de cinco negritos.
Flor de corozo.	Michoacan.	Raiz de varafunda.
Flor de sanguinaria.	Machul.	Raiz de valeriana.
Flor de zacth.	Madre de maiz.	Raiz de ipecacuanha.
Fruta pastate.	Manzanillo.	Raiz de guapilio.
Gengibrillo.	Meona.	Raiz de cebollín.
Gengibre.	Meona alves.	Raiz de calaguila.
Granadillo.	Malva francesa.	Raiz de rubiarbo.
Granadillo silvestre.	Malva de castilla.	Raiz de calague.
Guaco.	Malvavisco.	Raiz de rubin.
Guanacaste.	Murrublanco.	Raiz de jalapa.
Guarumo.	Malva silvestre.	Raiz de cuculmeca.
Guayabo.	Mejorana.	Raiz de orejuelo.
Guayacan.	Malagueta.	Raiz de guaco.
Hoja de guayabo.	Matilquate.	Raiz de yerba de conejo.
Hojas de higuera.	Morro.	Raiz de conté.
Hojas de verbena.	Monacillo.	Raiz de nahuapate.
Hojas mejor nada.	Mejor nada.	Raiz de yulpate.
Hojas de poleo.	Margarit.	Raiz de lavapiato.
Hojas de santo domingo.	Negritos.	Raiz de alcotan.
Hojas de barbasco.	Nispero.	Raiz de escobillo.
Hojas de salvia real.	Nardo.	Raiz de contrayerba.
Hojas de perro.	Naranjo amargo.	Raiz de tamagay.
Hojas del aire.	Nabo.	Raiz de canjin.
Hojas de hemela.	Nahuapate.	Raiz de pimienta.
Hojas de malva.	Nogal.	Romero.
Hojas de sintul.	Orozuz.	Sauce.
Hojas lava platos.	Orejuela.	Salvia santa.
Hojas sana lo todo.	Ortiga.	Salvia real.
	Ojo de venado.	Salvia de monte.
	Poleo.	Santo domingo.
	Pericon.	Sanalotodo.
		Sutio.

Medicinal Plants of Guatemala—Continued.

Sintul.	Tabaco.	Yerba vainilla.
Sintus.	Tostado.	Yerba del toro.
Semilla de cera vegetal.	Tostonera.	Yerba paleo.
Semilla de orejuela.	Tazol.	Yerba margarit.
Semilla de achiole.	Tarol.	Yerba del toro.
Semilla de caparroza.	Tisach.	Yerba buena.
Semilla de algodon.	Tucnlchumes.	Yerba de culebra.
Semilla de paraiso.	Tejutla.	Yerba de la meona.
Solo un pie.	Tamagaz.	Yerba rabla.
Sangre de drago.	Turlj.	Yerba de conejo.
Solajaj.	Uva.	Yerba del medico.
Sasafraz.	Upay.	Yerba del poro.
Sare negro.	Verbena.	Yerba de carnero.
Sacatinta.	Valeriana.	Yerba barbona.
Santísima trinidad.	Vainilla.	Yerba del ciervo.
Suchumacan.	Varafunda.	Yuquilla.
Sabin.	Venado.	Yulpate.
Setesac.	Yerba de orozuz.	Yaje.
Sanguinaria.	Yerba de sanalotodo.	Yuca.
Té del monte.	Yerba del cancer.	Zarza de monte.
Té de limon.	Yerba de santo domingo.	Zarzaparrilla.
Tomate del monte.		Zacaton.
Toro.		Zach.

## IV.

### FAUNA.

The *fauna* of Guatemala is naturally varied. As Mr. Juan Rodriguez, a very competent and respectable zoölogist of Guatemala, says, the geographical position, the diversity of climate, produced partly by its topography, the great number of rivers and creeks found everywhere and the richness and exuberance of the vegetation support the life of an immense number of animals. It also happens that a number of migratory birds which periodically pass from the northern to the southern hemisphere go through the territory of Guatemala. A number of birds also terminate their excursions in Guatemala, staying several months, some for procreation and others, like doves, ducks and birds of prey, only for food. The territory of Guatemala has two species of monkeys (the *Mono* and the *Mico*). The first is *Mycetes villosus*, the second the *Ateles vellerosus*. Of *Chiroptera* there are thirty-seven species, including vampires. To condense the account, this list is given of the principal animals, with their vernacular names:

	Name.	Scientific Name.
Musaraña .....		<i>S. rex verapacis.</i>
" .....		<i>Blarina micrura.</i>
Tigre.....		<i>Felis onca.</i>
Caucel.....		" <i>pardalis.</i>
Tigrillo .....		" <i>tigrina.</i>
Leon .....		" <i>cneolor.</i>
Leonicillo .....		" <i>yaguarandi.</i>
Tejon.....		" <i>eyra.</i>
Coyote.....		<i>Canis latrans.</i>
Gato de monte.....		<i>Vulpes virginianus.</i>

Nam	Scientific Name
Mapache.....	<i>Procyon lotor.</i>
Guia de leon.....	<i>Bassaris sumichrasti.</i>
Pizote.....	<i>Nasua nasica.</i>
Micoleon.....	<i>Cercopetes candiolontus</i>
Comadreja.....	<i>Mustela brasiliensis.</i>
Perico lijero.....	<i>Galictis barbara.</i>
Zorillo.....	<i>Mephitis mephatica.</i>
".....	" <i>putorius.</i>
".....	<i>Conepatus mapurito.</i>
Perro de agua.....	<i>Lutra felina.</i>
Vaca marina.....	<i>Manatus australis.</i>
Danta.....	<i>Tapirus bairdi.</i>
".....	" <i>dorsi.</i>
Coché de monte.....	<i>Dicotyles tuijucu.</i>
Jabali.....	<i>Dicotyles tabiatu.</i>
Venado.....	<i>Cariacus virginianus.</i>
Guizil.....	" <i>rufinus.</i>
Ardilla.....	<i>Sciuropterus volucella.</i>
".....	<i>Sciurus carolinensis.</i>
".....	" <i>griseoflaccus.</i>
".....	" <i>variegatus.</i>
".....	" <i>hypopyrrhus.</i>
".....	" <i>deppel.</i>
Raton.....	<i>Mus musculus.</i>
Raton de monte.....	<i>Hesperomys teguina.</i>
" "	" <i>sumichrasti.</i>
" "	" <i>conesi.</i>
" "	" <i>nudicaudatus.</i>
" "	<i>Ochetodon mexicanus.</i>
" "	<i>Sigmodon hispidus.</i>
" "	<i>Neotoma ferruginea.</i>
Taltuza.....	<i>Geomys mexicanus.</i>
".....	" <i>hispidus.</i>
Raton de monte.....	<i>Heteromys desmarestianus.</i>
" "	" <i>longicaudatus.</i>
Puerco espin.....	<i>Synetheres mexicanus.</i>
Cotuza.....	<i>Dasyprocta punctata.</i>
Tepescuintle.....	<i>Catogenys paca.</i>
Conejo.....	<i>Lepus palustris.</i>
Armado.....	<i>Tatusia novercinctia.</i>
Oso colmenero.....	<i>Myrmecophaga jubata.</i>
" "	" <i>tetradactyle.</i>
" de platanar.....	<i>Cycloturus didactylus.</i>
Tacuasin.....	<i>Didelphys virginiana.</i>
".....	" <i>qu'ca</i>
" raton.....	" <i>murina.</i>
" de agua.....	<i>Cheironectes vari-gatus</i>

#### BIRDS.

There are forty-nine species of *Butcos*, *Falcos* and other birds of prey; sixteen of owls and nightbirds, and 410 of smaller birds, besides a number of gallinaceæ.

Herewith is a list of the more common birds:

Senzontle.....	<i>Mimus gilvus.</i>
Pito Real.....	<i>Myriadeclis obscurus.</i>
Guarda barranca.....	" <i>unicolor.</i>
Chipe.....	<i>Dendraea</i> , species.
" gorron.....	<i>Cereba cyanea.</i>
Galandria.....	<i>Chlophonia</i> , species.
".....	<i>Euphonia</i> , species.
Cardenal.....	<i>Tanagra</i> , species.
Alcalde mayor.....	<i>Rhamphocelus</i> .
Chiltote.....	<i>Octerus</i> species.
Oropendola.....	<i>Istinope montezumæ.</i>

Chamas	<i>Cyanocitta.</i>
Urraca	<i>Calocitta formosa.</i>
Samate	<i>Quiscalus macrurus.</i>
Resplandor	<i>Muritora Mexicana.</i>
Raton	<i>Cotinga amabilis.</i>
Colibríes or Gorriones	<i>Trochilidae, 28 genera and 38 species.</i>
Carpinteros	<i>Picidae, 13 species.</i>
Golondrinas	<i>Paniptila Sancti Hieronymi.</i>
Torobojos	<i>Momotidae, 6 species.</i>
Pescadores	<i>Aicedinidae, 5 species.</i>
Quetzal	<i>Pharomacros mocino.</i>
Cuculido	<i>Cuculus, 8 species.</i>
Cucharones	<i>Rhamphastidae, 3 species.</i>
Loros or Pericos	<i>Psittacidae, 14 species.</i>
El Pangil	<i>Crex globiceps.</i>
Pavo de Cacho	<i>Oreophasis derbyanus.</i>
Pavo del Petén	<i>Meleagris ocellata.</i>
Perdices and Codornices	<i>Perdicidae, 7 species.</i>
Palomas	<i>Columbidae, 7 species.</i>
Zancudos	<i>Grallatores.</i>
Garzas and Garzones	<i>Ardeidae, 19 species.</i>
" "	<i>Platallidae.</i>
" "	<i>Ciconiidae.</i>
" "	<i>Ibidae.</i>
Gallinetas	<i>Rallidae,</i>
Gallarecas	<i>Parridae,</i>
Collarejos	<i>Charadridae,</i>
Becasinas	<i>Scotopactidae,</i>
" "	<i>Patimipedes,</i>
Alcatraces or Pelicanos	<i>{ Pelecanus fuscus,</i>
Ave horcado	<i>" trachyceph.</i>
Pato aguja	<i>Tregetta aquila.</i>
"	<i>Mycteria Americana.</i>
Palomas marinias	<i>Anseres,</i>
	<i>Colymbidae.</i>

## REPTILES.

### TORTUGAS.

*Chelonianæ, 9 species.*      *Chelonia Agazizii.*

### LAGARTOS.

*Crocodilus moreleti.*      *Crocodilus pacificus.*

### SAURIOS.

*Geckotianæ, 6 species.*      *Iguanianæ, 30 species.*

Iguana.

Garrobo.

Cutepe (*Basiliscus rittatus*).

Corytophanus.

Anolis.

Lacertianos,

Calcidianos,

Anfibianos,

Scincideanous,

Many species.

### OFIDIOS Ó CULEBRAS.

Tiplopidios, \*  
Pitonidos ó Boideoes.

Mazacuat, } *Boa imperator.*  
" " *Mexicana.*

### COLUBRIDOS.

Culebras.

Zumbadoras.

Leptophis.

Heterodon.

Sabanares.

Calamaria.

Tropidonotus.

Corales.

Raueras.

Elaphis.

Xedodon.

### VIPERIDOS.

Vibora castellana.

Cascabel (*Crotalus Horridus*).

Cantiles, } *Atropos.*

Crotalidos.

Tamagez (*Bottrops*).

" *Lachesis.*

### ANFIBIOS Ó BATRACIOS.

Ranas, 9 species.

Niños,

*Bolitoglossa.*

Sapos (*Bufonidae*), 5 species.

Pie de niño,

*meiobranchus*

Tapelena (*Siphonops mexicana*).

Niño dormido,

*Fishes.* There are over three hundred different species of fishes; fourteen species were found in the lake of Petén,

three in the lake of Atitlan, seven in the lake of Amatitlan, thirteen in the Motagua River, thirteen in the Usumacinta River and ten in the Rio Polochic. The most appreciated fishes are the

Tepemechin.....	<i>Agnostoma microps.</i>	Juillín .....
Mojarra.....	<i>Heros.</i>	Bagre or tante .. <i>Arius.</i>
Bobo.....	<i>Eleotris dormitatriz.</i>	Peje..... <i>Lepidostemus tropicus.</i>

Of Moluscs the following are edible:

<i>Helix Giegebrectii</i> .....		Almejas..... <i>Mytilus.</i>
Jutes.....	<i>Melania.</i>	Ostras ..... <i>Ostrea.</i>

The insects are too numerous to be enumerated here.

A great number of these animals here enumerated have economic value, such as the skins of deer and other mammals, the feathers of species of Ara, Tropic, Pteroglossus, Chrysotis, Rhamphastus, Phaethon, Ceryle, Hylomanes, Melanespes, Cotinga, Chirochiphia, Pipra, Milvulus, Yeterus, Xanthura, Agelæus phœnicerus, Cyanospiza, Tanagra, Chlorophanes, Euphonia, Calliste, Coereba, Pyrrhura, Rhamphocelus, Sialia, etc., the shells of carey (*Testudo*), the skins of a number of snakes and alligators, many fishes and moluscs, butterflies, etc. Also some living animals, such as parrots, small birds, monkeys, etc., are articles of commerce, although of slight importance.

## V.

### **POPULATION.**

Guatemala has 1,364,678 inhabitants, of whom more than two-thirds are pure Indians maintaining to a great extent their old customs. There are only 11,300 foreigners found in the entire Republic.

There are twenty-two Departments, with ten large cities and twenty-two smaller ones and 304 townships. Over 1,000,-000 of the people live at an altitude of 3,000 feet above the sea, and in a moderate healthful climate.

In the northern half of the Republic, covered mostly with humid forests, there are but two and a half inhabitants on a square kilometer; in the southern half, which is less humid and has a less exuberant vegetation, there are 25.6 inhabitants. In the highest regions (as Alta Verapaz, Quiché and Huehuetenango) the density of the population is 10.4 per sq. km. The dry regions of prairies and chaparrals, with a vegetation of pines and oaks, have 30.1 inhabitants on the same area. Lower down, on the slopes of the volcanic chain, fronting on the Pacific Ocean, 15 inhabitants are found on a sq. km. In the hot region the density of population is not much over 0.4 of the same space. The average density for the entire republic is 12.5 per sq. km.

The density of population per sq. km. in each Department is as follows:

Totonicapan.....	95.6	Chimaltenango.....	27.2	Huehuetenango .....	14.4
Sacatepequez.....	74.2	Suchitepequez.....	22.5	Quiché .....	13.6
Guatemala.....	70.6	Santa Rosa.....	16.5	Zacapa.....	12.7
Amatitlan.....	48.7	Retalhuleu.....	16.5	Escuintla.....	9.1
Quezaltenango.....	47.6	Baja Verapaz.....	15.3	Alta Verapaz.....	9.0
Sololá .....	30.1	Jutiapa.....	16.0	Izabal.....	1.0
San Marcos.....	27.7	Jalapa.....	15.9	Petén.....	0.2
Chiquimula.....	27.4				

The population, separating the mixed and white people (Ladinos) from pure Indians, in the different Departments is as follows:

Name.	Ladinos.	Indians.	Name.	Ladinos	Indians.
Guatemala.....	88,562	58,125	Santa Rosa .....	48,071	7,703
Alta Verapaz.....	7,976	120,249	Jutiapa .....	15,617	21,519
Quezaltenango.....	38,375	86,865	Sacatepequez.....	29,800	16,271
San Marcos.....	37,852	85,740	Suchitepequez.....	19,575	24,181
Totonicapan.....	4,373	105,262	Retalhuleu.....	17,831	21,842
Huehuetenango.....	17,325	83,585	Zacapa.....	22,679	16,391
Quiché.....	14,431	77,002	Jalapa .....	35,626	17,042
Sololá .....	5,983	60,535	Escuintla.....	25,000	11,663
Chiquimula .....	18,761	46,664	Amatitlan.....	25,450	10,700
Chimaltenango.....	10,600	54,655	Izabal.....	4,918	3,525
Baja Verapaz.....	14,550	43,039	Petén.....	4,877	3,443

The total population in regard to age is composed as follows:

1 year .....	66,837	30 to 40 years.....	167,317
1 to 6 years.....	203,910	40 " 60 "	164,644
6 " 14 " .....	232,948	60 " 80 "	60,403
14 " 18 " .....	123,852	80 " 90 "	14,899
18 " 21 " .....	101,153	90 " 100 "	4,094
21 " 30 " .....	223,725	Over 100 "	893

Of this population, 888,615 persons are single (450,196 men, 438,419 women); 396,696 married (196,730 men, 199,966 women); 79,367 widowed (30,546 men, 48,821 women).

There are a few Chinamen and a number of Negroes, mulattoes and Zambos on the sea coasts, in La Libertad (Petén), Panzos (Alta Verapaz), Salamá and San Jeronimo (Baja Verapaz) and along the Rio de los Esclavos (Santa Rosa).

Of the total population there are further, by nationality, 1,303 Americans (mostly Jews from the West); 532 Spaniards; 453 Italians; 399 Germans; 349 English; 272 French.

By occupation, 327,594 persons are laborers; 46,054 bakers of tortillas (maize-bread); 21,930 weavers; 13,034 merchants; 9,653 seamstresses; 7,759 servants and female cooks.

Again, 1,240,092 persons are illiterates; 827,058 are urban population; 1,356,105 are Catholics.

The following lists give the names of the principal cities and municipalities and their population, as well as the altitude of each:

Name,	Population.	Altitude above the sea in meters.	Department.
Guatemala .....	64,000-72,000	1,480	Guatemala.
Totonicapan .....	33,000	2,429	Totonicapan.
Quezaltenango .....	24,000	2,262	Quezaltenango.
Coban .....	23,000	1,234	Alta Verapaz.
Chiquimula .....	13,000	356	Chiquimula.
Jalapa .....	13,000	1,410	Jalapa.
Escuintla .....	13,000	384	Escuintla.
Salamá .....	11,000	862	Baja Verapaz.
Antigua .....	10,000	1,361	Sacatepequez.
Amatitlan .....	9,000	1,102	Amatitlan.

Other populous municipalities are:

Name.	Population.	Altitude above the sea in meters.	Department.
Zacapa .....	12,000	156	Zacapa.
Quiché .....	13,000	1,690	Quiché.
Jutiapa .....	14,000	868	Jutiapa.
Huelhuetenango .....	10,000	2,170	Huelhuetenango.
Retalhuleu .....	10,000	298	Retalhuleu.
Sololá .....	15,000	1,811	Sololá.
Mazatenango .....	10,000	224	Suchitepequez.
San Marcos .....	9,000	2,200	San Marcos.
Atitlán .....	10,000	1,500-2,000	Sololá.
Chichicastenango .....	22,000	2,000-2,500	Quiché.
Comitancillo .....	13,000	2,000	San Marcos.
Cohabón .....	14,000	25-500	Alta Verapaz.
Jocotán .....	12,000	250-500	Chiquimula.
Monostenango .....	28,000	2,000-2,500	Totonicapan.
San Pedro Pinula .....	10,000	1,000-1,500	Jalapa.
Rabinal .....	13,000	500-1,000	Baja Verapaz.
San Juan Sacatepequez .....	19,000	1,500-2,000	Guatemala.
San Martín Ixtahuacán .....	10,000	1,500-2,000	Chimaltenango.
Santa Lucia Utatlán .....	10,000	400	Eseuintla.
San Miguel Petapa .....	11,000	1,000-1,500	Amatitlan.
San Pedro Carchá .....	36,000	1,000-1,500	Alta Verapaz.
San Cristóbal .....	11,000	1,000-1,500	Alta Verapaz.
San Pedro Sacatepequez .....	14,000	2,000-2,500	San Marcos.
San Felipe .....	11,000	500-800	Retalhuleu.
San Juan Ostuncalco .....	15,000	2,500-3,000	Quezaltenango.
San Francisco el Alto .....	22,000	2,500-3,000	Totonicapan.
Santa María Chiquimula .....	11,000	2,000	Totonicapan.
Santa Rosa .....	10,000	1,000-1,500	Santa Rosa.
Tacaná .....	15,000	2,000-2,500	San Marcos.
Tejutla .....	10,000	2,000	San Marcos.

The population of Guatemala lives in 325 houses of two stories, 53,574 of one story, and on 171,604 ranchos.

*Public education:* Elementary tuition is given in schools of the first and secondary grades. There are now about 1,309 schools. The average daily attendance in the

national schools was 32,958 boys and 19,330 girls, 3,232 adults and 1,860 of both sexes in the private schools, making a total of 57,386. In addition there were also thirteen kindergartens.

In 1890 there were 1,252 schools throughout the Republic, divided as follows: 462 country schools, 760 city schools and 30 private schools; or, classified in another way, 691 for small boys, 369 for small girls, 48 mixed, 89 for workmen, 15 additional for small boys and 10 for small girls. These employ 1,531 teachers, 987 males and 544 females.

There are several public institutes in which higher grades of instruction are given gratuitously. There are two establishments of this kind for girls in Guatemala and Quezaltenango and three for young men, besides one in Chiquimula. In the Capital, as well as in Quezaltenango, the Government has established special schools of law, medicine and pharmacy. It has also founded a school for engineers, a polytechnic college for those intending to follow a military career, a commercial school, an agricultural school, an Academy of Fine Arts, a normal school for young women, another for young men incorporated with the Central Institute, and lastly a Conservatory of Music.

In order to facilitate the education of the working classes night schools have been organized in several cities, and also public libraries opened, which are endowed by private donations and by State appropriations.

In the schools of arts and trades a general education is given in connection with their technical or special instruction.

In the city of Guatemala there is a fine national library, in which, besides over 30,000 books, there are several valuable collections of documents and inedited works.

There is also a great number of newspapers in the Capital and other principal cities.

*Indians:* As the Indian population is the most numerous, in the following pages some very interesting particulars are given.

These aboriginal people are descendants of many tribes, which, at the time of the conquest, were found in the following divisions:

1. *States of the Pipiles*, the Panatacatl, Cuzcatlan (Salvador), and the so-called Cacigazgos of the Pipiles, occupying the Departments of Escuintla and Jutiapa, and the parts bordering Salvador.

2. *States of the Kingdom Quiché*, divided into the kingdoms of Quiché, of the Mames and of the Cakyac, and into the cacigazgos of the Cuchumatanes, of Uspantlan and of Tujal, occupying the present Departments of San Marcos, Retalhuleu, Quezaltenango, Suchitepequez, Totonicapan, Quiché, Sololá, Huehuetenango and Baja Verapaz.

3. *States of the Cakchiqueles*, divided into the kingdoms of Iximché and Yampuk and into the cacigazgos of the Akahates ó Pocomames, comprising the present Departments of Chimaltenango, Sacatepequez, Amatitlan, Guatemala and parts of Santa Rosa, Jalapa and Jutiapa.

4. *States of the Mayas*, divided into Acalan, Mazatlan, (Quiacho), Taizá and Mopan, and into the cacigazgos of the Lacandones, corresponding with Petén and some parts of Quiché and Alta Verapaz.

5. *States of the Chortics*, composed of the kingdoms of Copan and of Esquipulas, situated in the present Departments of Zacapa, Chiquimula and in parts of Izabal.

6. *Independent cacigazgos of the Choles*, found in Izabal and parts of Alta Verapaz.

7. *Independent cacigazgos of Tezulutan*, in Baja Verapaz.

8. *Independent Kingdom of the Tzutuhiles*, south of the lake of Atitlan in the present Department of Sololá.

9. *Independent cacigazgos of the Xincas* in the present Department of Santa Rosa and in part of Jutiapa:

How slight the influence of the Spaniard and the Republican governments of Guatemala has been in civilizing those Indians is shown by the fact that seventeen different languages are still spoken among them.

These languages are:

1. *Quekchi*, spoken mostly in Verapaz, namely in Coban, Lanquin, Panzos, Cahabon, Chimaja, Rio Negro, Coyanté, Golfo Dulce, etc.

2. *Quiché*, spoken in Chicacao, Mazatenango, Retalhuleu, San Felipe, Quezaltenango, Totonicapan, Santa Cruz de Quiché, Zacapulas, Rabinal and Saltan.

3. *Mam*, spoken mostly in the Departments of San Marcos and Huehuetenango, in such places as Mercedes, San Pedro, San Marcos, Tejutlaj, Tuxtla chico, Teatitan, Chiantla and Todos Santos.

4. *Cakchiquel*, mostly spoken in the Departments of Sololá, Chimaltenango and Sacatepequez, in Patulul, Antigua, Mexico Viejo, San José, Eucuentros and Sololá.

5. *Maya*, spoken in the Department of Petén (in Flores, Santa Barbara, Dolores, San Toribio, San Juan, Chuntuque and islands).

6. *Pocomam*, spoken in the Departments of Amatitlan, Sacatepequez and Guatemala (Amatitlan, Mixco, Chinantla, San Antonio, Canoas, Mixco Viejo and separately in Pinula and Jilotepeque).

7. *Charti*, spoken in Chiquimula, Ipala, Jocotan and Taquaimi in the Department of Chiquimula.

8. *Poconchi*, spoken in the upper valley of the Polochic River, in Pancus, Tucuru, Tachic, San Cristobal and Chixay.

9. *Zutuhil*, spoken from the southern shore of the lake of Atitlan to near Chicacao and Mazatenango in the Department of Sololá.

10. *Chuj*, spoken in the upper part of Huehuetenango, especially in Amieleo, San Mateo, Gracias and near Neuton.

11. *Xinca*, spoken in the vicinity of Chiquimutilla, Alzata, Jalapa, Yupiltepeque and Jumaitepeque in the Departments of Santa Rosa and Jutiapa.

12. *Ixil*, spoken in the Department of Quiché, around Cozal, Nebaj, Chajut and Ilom.

13. *Jacalteca*, spoken in Santa Eulalia, Soloma, San Juan, Jacaltenango and Camohá in the Department of Huehuetenango.

14. *Aguacateca*, spoken in Aguatan, Department of Huehuetenango.

15. *Uspantea*, spoken around Uspantan, Department of Quiché.

16. *Carabe*, spoken around Livingston on the Gulf of Honduras, Department of Izabal.

17. *Pipil*, spoken in separate places in the Departments of Jutiapa, Zacapa and Baja Verapaz.

The *Spanish language* is only generally spoken along the Pacific coast, in the city of Guatemala and in the direction of Salvador and Honduras, as well as in the valley of the Motagua River.

The clothing of the Indians varies as much as their languages. The principal raw materials for it are cotton, wool, silk, palm leaf and maguey fibre. They are now mostly cotton, wool and silk yarns imported and woven by Indian women in their primitive looms. The greatest variety is seen in skirts, and this as well in raw material, and in dimensions, especially lengths, as in color and adornments. Particularly fine looking skirts for women, called *Huipiles*, are found in Totonicapan, Baja Verapaz, Alta Verapaz, Quiché and Chimaltenango. Also in women's scarfs, called rebozos, a great variety of colors distinguishes one tribe from another. The wardrobe of an Indian is not much varied; a hat, a pair of sandals, trousers, a belt of wool, silk or cotton, called *faja* or *banda*, a shirt, and sometimes a jacket, compose his complete outfit.

Often a change in the habits of the Indian illustrates the eagerness of statesmen to obtain a quick result in civilizing him, rather than any transformation of character. So far, the Indian sticks to his customary clothing and his own language, as no Government has ventured to incur the ill-will of the farmers and proprietors, who fear in a change of Indian habits a change in labor conditions, which might mean a serious embarrassment of their interest.

The Indian lives generally in a hut of any form, made with wooden posts, bamboo or cornstalks, straw, or other material easily handled. Adobes or stones are seldom used, and when used it is mostly for a church or government building, as in olden times, when temples and public buildings alone were built of durable material.

Speaking of older structures, Guatemala possesses several centres of important and interesting architectural remains of ancient Indian civilization. They are Tical (Petén) near the frontier of Yucatan, Quiché or Utitlan or Cumarcáah, near Santa Cruz de Quiché, Iximché, near Tecpan (Guatemala), in the Department of Chimaltenango, Santa Lucia and Cutzumalguapa in the Department of Escuintla, where the celebrated D. A. Bastian collected beautiful antiquities, Senaca Mecallo, near Comapa in the Department of Jutiapa, and Quirigua, southward of the port of Izabal, on the left hand shore of the Motagua River.

Next to architectural works, some idols and all kinds of earthenware pottery have received the attention of the scientific world, especially specimens from Quiché, Alta and Baja Verapaz, Chimaltenango, Huehuetenango, Jalapa and Jutiapa. Antique pottery has also been found in the lake of Atitlán near the shore, and some large stone idols have been discovered on the slopes of the Volcán de Agua.

Pottery still forms an important industry of the aborigines. The most celebrated earthenware comes from Totonicapan, San Marcos, Quezaltenango and Chimaltenango.

The principal industry of Guatemalan Indians is textile, to which should be added the manufacture of hats, baskets, ropes, nets, hammocks, sacks and all kinds of clothing. All these industries are, of course, domestic, and mostly in the hands of women, who also are the sellers or merchants.

Men cultivate the soil, planting maize, tobacco, beans, bananas, etc., and they work as ordered by the authorities.

The Indians bear also the burden of maintaining the roads as a personal tax. Since the conquest an annual tax of two pesos has been imposed on every man from eighteen years of age up, or four days' work in opening or repairing roads.

Notwithstanding this tax, which has been collected for centuries, very few roads are in existence, and most of those which do exist are in a poor condition.

The Indians also in many other ways are suffering the adverse consequences of the Spanish colonial dominion. The practice of exploiting the mass of the people continues to this

day. Very little has been done to raise the intellectual level of the Indians and to emancipate them from superstition and misery. Out of a population of 1,364,678 there are 1,240,092 without any education.

There is also an agricultural law which compels the Indian to work in a way that amounts to practical slavery not unlike that of olden times. The laborer must obey the orders of the authorities; he cannot leave his place under any circumstances until his work is done or his debts paid. Each one of them carries with him a book in which his debts are stated, and from it may be learned his obligation for future work. It is a common occurrence that these obligations are sold, which means the forced transfer of the working man from one place to another without any consideration for him. A sure consequence of such a system is the exclusion of free labor as understood in the United States. Under it wages are very low, and no foreigner will compete for them. Hence, immigration and colonization, with their resulting advantages, cannot be expected in Guatemala for many years to come.

## VI.

### AGRICULTURE AND LIVE STOCK.

The larger part of the population in Guatemala is occupied with agriculture. The different agricultural products raised depend on the elevation of the lands above sea level and on climatical conditions. Their distribution is clearly indicated in the table at the end of the chapter on Vegetation. Economically, the most important plant cultivated in Guatemala is the coffee tree, and especially the *coffea arabica*.

The crop of coffee in 1894 (the latest statistical data) was 66,256,600 pounds, of which the

Department of Guatemala,	produced on	417,135 trees	144,200 pounds.
" Sacatepequez,	"	1,966,195 "	1,394,400 "
" Chimaltenango,	"	5,934,602 "	6,824,600 "
" Amatitlan,	"	3,406,807 "	2,112,100 "
" Escuintla,	"	4,116,242 "	4,464,500 "
" Santa Rosa,	"	5,480,325 "	3,116,500 "
" Sololá,	"	4,946,459 "	4,930,800 "
" Quezaltenango,	"	14,012,007 "	14,849,300 "
" Suchitepequez,	"	4,949,128 "	7,762,600 "
" Retalhuleu,	"	3,754,524 "	3,301,600 "
" San Marcos,	"	10,954,767 "	12,184,600 "
" Huehuetenango,	"	72,888 "	111,100 "
" Quiché,	"	422,567 "	4,200 "
" Baja Verapaz,	"	280,124 "	239,400 "
" Alta Verapaz,	"	4,757,130 "	4,314,300 "
" Petén,	"	19,322 "	17,700 "
" Izabal,	"	149,000 "	1,000 "
" Zacapa,	"	638,430 "	122,700 "
" Chiquimula,	"	558,260 "	248,000 "
" Jalapa,	"	25,722 "	13,200 "
" Jutiapa,	"	172,834 "	97,100 "

Total, 67,054,928 trees 66,156,500 pounds.

The principal coffee regions are:

In Quezaltenango: Colomba, Chuva and Palmar.

In San Marcos: Tumbador, San Pablo, San Cristobal and Progreso.

In Suchitepequez: San Francisco, Zapotitlan and San Antonio.

In Chimaltenango: Pochuta, San Pedro, Yepocapa and Acatenango.

In Santa Rosa: San José de Barberena.

In Retalhuleu: San Felipe.

In Sololá: Chicacao, Santa Barbara and Patulul.

In Escuintla: Escuintla and Santa Lucia Cotzumalguape.

In Amatitlan: Amatitlan and San Miguel Petapa.

In Alta Verapaz: San Pedro, Carcha and Coban.

In Zacapa: Gualan.

In Baja Verapaz: Purulhá.

Coffee grows best in the region of the volcanoes and in Alta Verapaz, with over 2,000 millimeters of rainfall per year, 18° to 26° C., average temperature, and between 200 and 1,600 meters in height above the sea level.

The report of this product, which is nearly the only one going extensively abroad, has been, since 1873, as follows:

Year.	Pounds.	Price per 100 lbs. in pesos.	Value in pesos.	Year.	Pounds.	Price per 100 lbs. in pesos.	Value in pesos.
1873	15,056,000	..	....	1884	37,130,600	..	4,415,667
1874	16,158,300	..	....	1885	52,031,800	..	5,203,181
1875	16,357,900	..	....	1886	52,975,100	11	5,827,264
1876	20,740,000	..	....	1887	47,869,100	17	8,137,478
1877	20,996,400	..	....	1888	36,639,900	18	6,595,181
1878	20,935,800	..	....	1889	55,288,900	23	12,704,948
1879	25,201,600	..	....	1890	50,859,900	25	12,714,981
1880	28,976,200	..	....	1891	52,448,500	25	13,112,379
1881	26,037,200	..	4,084,348	1892	49,164,200	28	13,765,983
1882	31,227,100	..	8,719,200	1893	59,840,300	31	18,550,515
1883	40,406,900	12	4,848,837				

The best prices are obtained for coffees produced in high regions.

The next most important agricultural product is the banana. In 1894 there were 9,045 hectares planted with bananas, which produced 2,106,908 bunches.

Table of banana production for ten years, ending 1893:

Year.	Production in bunches.	Value in pesos.	Year.	Production in bunches.	Value in pesos.
1883	29,699	11,879	1889	110,222	44,088
1884	31,645	"	1890	283,077	118,230
1885	60,416	30,208	1891	981,998	392,799
1886	55,322	27,661	1892	996,854	389,741
1887	130,427	65,213	1893	264,851	178,113
1888	113,408	56,704			

The principal banana production is in Santa Rosa (816,958 bunches), Alta Verapaz (248,466 bunches), Izabal (199,096 bunches), Sololá (167,725 bunches), Suchitepéquez (162,186 bunches), Retalhuleu (92,330 bunches), Escuintla (81,630 bunches), San Marcos (76,690 bunches), Quezaltenango (74,572 bunches), Amatitlan (72,962 bunches).

The production of the sugar-mills in 1894 was 6,555,250 pounds of sugar, 10,881,000 cakes of panela, 923,900 pounds of molasses called "miel," and 3,537,100 pounds of the so-called "mascabado."

The principal sugar regions are:

Amatitlan.....	8,903 Hectares of cane.	Suchitepéquez .....	729 Hectares of cane.
Escuintla.....	6,356 "	Sololá.....	683 "
Baja Verapaz.....	1,979 "	Alta Verapaz.....	678 "
Quiché.....	1,364 "	Chimaltenango.....	6 9 "
Quezaltenango.....	1,922 "	Santa Rosa.....	428 "
San Marcos.....	1,054 "	Retalhuleu.....	424 "
Huehuetenango...	988 "		

Nearly all of the sugar is consumed in Guatemala. The export of this product since 1879 has been as follows:

Year.	Pounds.	Year.	Pounds.	Year.	Pounds.
1879.....	134,000	1884.....	3,795,600	1889.....	1,002,400
1880.....	410,600	1885.....	6,342,900	1890.....	1,052,400
1881.....	15,600	1886.....	7,614,300	1891.....	.....
1882.....	1,374,700	1887.....	.....	1892.....	.....
1883.....	4,462,700	1888.....	4,411,800	1893.....	1,057,200

As to *Indian corn* there were produced of it in 1894, 161,412,475 pounds. The following varieties are cultivated: Maiz blanco, Maiz rojo, Maiz salpor, Maiz negro, Maiz colorado,

Maiz amarillo, Maiz pinto and a few others. Indian corn is principally raised in Totonicapan (34,124 hectares), Chimaltenango (11,843), Guatemala (9,986), Alta Verapaz (6,435), Sololá (6,097), Quezaltenango (5,949), Santa Rosa (5,290), Sacatepéquez (4,054), Jalapa (3,931), Zacapa (3,885), San Marcos (3,603), Huehuetenango (3,543), and Amatitlan (3,035).

A very important product for the alimentation of the people is the *bean*. There are also of this plant a number of varieties, such as Frijol blanco, Frijol negro, Frijol café, Frijol amarillo, Frijol colorado, Frijol pinto, Frijol piloy, Frijol aplomado, Frijol pilique, Frijol istapacal, Frijol espumita, etc.

In 1894 there were produced about 6,536,200 pounds of beans. The principal bean producing Departments are Guatemala (1,006 hectares), Chimaltenango (984), Sololá (931), Amatitlan (573), Chiquimula (375), Alta Verapaz (366), Zaca (359), Sacatepéquez (354), Santa Rosa (265), Jalapa (260), Izabal (257).

Tobacco is mostly produced in Chiquimula (9,983,700 plants), Zaca (2,214,000), Jalapa (1,585,000), Santa Rosa (792,000), Jutiapa (570,000), Quiché (538,000), Petén (244,000).

The total crop in 1894 was 1,474,068 pounds, and all this tobacco was consumed in the country itself. In 1896 only 408 pesos worth of tobacco was exported.

The production of *cacao* is still very limited. There were in 1894 1,672,940 cacao trees, which gave 417,173 pounds of beans. The principal cacao producing Departments are: Escuintla (607,876 trees), Suchitepéquez (587,668), Sololá (204,301), Retalhuleu (122,898). The export of cacao in 1896 amounted to a valuation of only 8,661 pesos.

*Wheat* is mostly cultivated in Quezaltenango (3,808 hectares), Suchitepéquez (2,151), Chimaltenango (2,132), Totonicapan (1,420), San Marcos (943), Jalapa (250), and Huehuetenango (137). The total area is 10,965 hectares.

Of *barley* only 397 hectares were cultivated, of which 119 were in Chimaltenango, 86 in Sacatepéquez, 78 in Guatemala, 36 in Quezaltenango, 33 in Sololá, and 31 in Amatitlan.

*Oats* were mostly planted in Quezaltenango (192 hec-

tares), San Marcos (115), and Totonicapan (111). The total area was 432 hectares.

*Potatoes* were cultivated in Totonicapan (530 hectares), San Marcos (235), Quetzaltenango (166), Sololá (54), Huehuetenango (48), Sacatepéquez (40), etc. The total area devoted to this crop was 1,136 hectares.

The production of other products, like rice, yucca (*Manihot*), ñame, sweet potatoes, indigo and garden plants, including vegetables, is very limited. Also, fruit trees are not very abundant, with exception of oranges, mango, jocote, aguacate, guayabo, and some others.

Passing to the *live-stock*, there are about 163,381 horses and mules, 497,130 cattle and 490,176 sheep and goats distributed all over the country, and they are mostly found in regions of savannas or in potreros, of which there are about 316,071 hectares, namely 50,331 in the Department of Guatemala; 39,850 in Santa Rosa; 38,407 in Huehuetenango; 29,898 in Escuintla; 24,248 in Alta Verapaz; 22,564 in Zacapa; 13,259 in Baja Verapaz; 12,515 in Amatitlan; 12,402 in Chiquimula; 13,183 in Sololá; 11,126 in Jutiapa; 10,263 in Suchitepéquez; 7,810 in Sacatepéquez; 6,704 in San Marcos; 6,645 in Jalapa; 5,843 in Quetzaltenango; 5,404 in Quiché; 4,192 in Retalhuleu, etc. In 1896 cowhides valued at 3,360 pesos were exported to the United States.

The salaries and wages paid in agriculture are as follows:

Foremen.....	25 to 100 paper pesos per month.
Labors.....	20 to 75 centavos paper money per day.
Peons.....	50 centavos to 1 pesos paper money per day.
Coachmen.....	20 to 60 peso paper money per month.
Cooks.....	3¢ to 100 pesos paper money per month.

## VII.

### **MEANS OF COMMUNICATION.**

A very important factor in the economic development of a country is its means of communication. Guatemala is also here deficient.

The principal roads are called "*caminos carreteros*," more or less fitted for transportation by ox or mule carts. Such roads exist between Guatemala and Quezaltenango, between Quezaltenango and San Marcos, between Quezaltenango and Retalhuleu, between El Rodeo and Ocos, between El Rodeo and Caballo blanco, between Retalhuleu and Mazatenango, between Escuintla and Santa Lucia, between Guatemala and San Antonio, between Guatemala and Antigua, between Antigua and Escuintla, between Guatemala and Cuajiniquilapa, between Cuajiniquilapa and Mataquescuintla, between Coban and Panzos, between Chiquimula and Zacapa, between Zacapa and Gualan, between Guatemala and Jalapa, and between Guatemala and San José.

The only stage service in the country is between Guatemala and Quezaltenango and between Guatemala and Antigua.

During the rainy season the roads are in a wretched condition, and during the dry season little is done to them, notwithstanding that most of the exported and imported goods have to be moved on these roads.

The following table gives the distances between the principal points in Guatemala:

Guatemala to			Guatemala to		
Antigua.....	9	leagues.	Huehuetenango.....	65	leagues
Chimaltenango.....	12	"	Santa Cruz de Quiché.....	32	"
Amatitlán.....	6	"	Salamá .....	23	"
Escuintla .....	14½	"	Cobán .....	42	"
Cuajiniquilapa.....	14	"	Flores.....	107	"
Sololá.....	30	"	Izabal.....	72	"
Totonicapan .....	37	"	Zacapa .....	42	"
Quezaltenango.....	40	"	Chiquimula .....	45	"
Mazatenango .....	46	"	Jalapa.....	25	"
Retalhuleu .....	51	"	Jutiapa.....	29	"
San Marcos .....	55	"			

There are a number of railroads built for the exportation of coffee and the importation of foreign goods, with a gauge of only three feet (915 mm.). Of these the most important is the Central or Southern Railroad, 74.5 miles long, between the port of San José (Pacific Ocean) and the capital of Guatemala. It belongs to an American company. From this line a branch runs from Obero ó Naranja, thirteen miles from San José, to the port of Iztapa, near the mouth of the river of the same name. Another branch passes from Santa María (near Escuintla), twenty-eight miles from San José, to Santa Lucia and Patulul, traversing an important coffee and sugar country.

The next most important railroad is called "Ferrocarril Occidental," and connects the port of Champerico (Pacific Ocean) with San Felipe. It is forty-one miles long, and was built by capitalists domiciled in the country.

Perhaps not less important is the so-called "Ferrocarril del Norte," from Puerto Barrios (Atlantic Ocean) to the Rancho de San Augustin. It is 140 miles long, and was built by the national government with the intention of bringing it seventy-five miles farther, to the capital of Guatemala. It passes along the valley of the Motagua River, and opens a very rich zone for coffee and sugar production.

Still another railroad has been built along the Polochic River, between Panzos and Tucurú, in order to bring coffee and other products from the Departments of Verapaz down to the port of Livingston. Finally, in course of construction is a railroad from the port of Ocos (Pacific Ocean) inland in

the direction of San Marcos, also built with the purpose of facilitating the transportation of coffee and of promoting increased production.

Since these railroads were opened, transportation by ox or mule carts, or by packing on the backs of mules or Indians, has diminished considerably, although the cart roads are still full of Indians and beasts of burden, carrying wood, iron, minerals, coffee, sugar, corn, beans, fruits, vegetables, earthenware, charcoal, hay, etc., to market.

In another place the ports of San José, Champerico and Ocos, and the river port of Iztapa, all on the Pacific coast, have been mentioned, as well as the ports of Livingston, Puerto Barrios and Santo Tomas, on the gulf of Honduras; the port of Izabal, on Lake Izabal; and the river ports of Gualan on the Motagua, and Panzos on the Polochic Rivers, tributaries to the Atlantic Ocean. These are important factors of Guatemalan trade.

In 1893 the maritime movement of Guatemala, as to packages and weight, was as follows:

Port of San José,	398,817	pieces, or 78,828,000 pounds.
" Champerico,	218,838	" 24,374,500 "
" Ocos,	31,467	" 4,114,300 "
" Livingston,	103,080	" 9,101,000 "
Total.....	752,202	116,418,000

In 1896 there were 748,266 pieces, or 65,687,660 pounds.

There entered and cleared in 1893 the following shipping: 378 vessels carrying the American flag; 55 carrying the German; 47 carrying the English; 20 carrying the Norwegian.

The *steamship lines* which regularly visit the Pacific ports, of which each one has an iron pier, are the Pacific Mail, an American line plying between Panama and San Francisco, and the Kosmos and Kirsten lines, both German. These three lines receive a subvention from the Government.

The steamers of the Pacific Mail have the following itinerary:

The steamer which sails from Panama on the 9th of each month arrives at San José on the 15th, at Champerico on the 16th, at Ocos on the 17th.

The steamer which sails from Panama on the 19th arrives at San José on the 28th, and at Champerico on the 29th.

The steamer which sails from Panama on the 28th or 29th arrives at San José on the 4th or 5th, and at Champerico on the 5th or 6th.

The coast steamer which sails from Panama on the 10th of each month arrives at San José on the 20th, at Champerico on the 21st.

The coast steamer which sails from Panama on the 30th arrives at San José on the 12th, at Champerico on the 13th, and at Ocos on the 14th.

The same steamers sail from San Francisco (California) on the 8th, 18th and 29th.

The first arrives at Ocos on the 19th, at Champerico on the 21st, and at San José on the 24th.

The second arrives at Champerico on the 2d, and at San José on the 5th.

The third arrives at Champerico on the 10th, and at San José on the 15th.

The Kosmos and Kirsten lines take about fifty days in coming from Hamburg *via* the Strait of Magellan, but they have no fixed itinerary. In the same condition are the steamers which visit Puerto Barrios, Santo Tomas and Livingston.

These ports on the Atlantic coast are visited by a number of steamers which go to New Orleans, New York and Europe from Belize, Livingston and Puerto Barrios and the north coast of Honduras. A number of sailing vessels, from eight to twelve, are running on the same routes, but without fixed itineraries.

As to other means of communication, Guatemala is also connected by cables and telegraphs with the civilized world. In 1893 there were 3,886 km. (2,430 miles) of telegraph lines, with 139 offices, which together dispatched 702,433 telegrams. The postal service maintained 176 offices, which distributed 4,379,654 letters and sent out 5,150,926.

## VIII.

### **FINANCE, COMMERCE AND INDUSTRY.**

The commercial world of Guatemala is seriously depressed by existing economic and financial as well as political disturbances. Besides the considerable fall in the value of silver, the "curso forzoso" of the paper money, the deficiency in the last coffee crop, and the low price paid for it, there were also the last revolution with its ruinous consequences, the recent Central American Exposition with special allowances for free importation, and an unreasonable financial policy of the late President which heavily embarrassed the country and impaired the welfare of the nation, to make the situation appalling.

Large coffee and sugar planters have exhausted their credit abroad and many merchants have been obliged to suspend payment. There is besides superabundance in many imported products, with the exception of articles of daily and general use, such as flour and nutrient farm produce, tobacco, etc. Drafts for foreign exchange have a very high premium, and many merchants ceased long ago to send drafts to Europe or to the United States, waiting for better times.

Taking up the finances and revenues of Guatemala, the treasury derives its income from the following sources: taxes on liquors and duties on imports and exports, stamped paper and revenue stamps, taxes on real estate and on roads, charges for exemption from military service, taxes on live stock, flour,

salt, inheritances, sales and donations of immovable property, fines and confiscations, sale of vacant lands, revenues from pawn shops and from post and telegraph service.

The headquarters of the custom-house service received in 1896

4,498,838.64 pesos import duties from Guatemala City.
1,783,885.25 " " " Retalhuleu.
19,537.20 " " " Champerico.
566,628.18 " " " Livingston.
112,662.76 " " " Ocos.
45,070.43 " " " Overland Places.

Total..... 7,026,621.81 pesos.

There are also some export duties, as on coffee, so that the total amount of customs receipts in 1896 was 8,984,417.51 pesos.

In 1896, besides the custom dues of .....	8,984,417.51 pesos
There were dues on liquor and victuallers' licenses to the amount of 3,788,245.37 "	"
Various taxes, to the amount of .....	2,069,017.75 "
Telegraph service, to the amount of .....	211,875.49 "
Postal service, to the amount of .....	97,185.32 "

Total..... 15,150,741.44 pesos.

The expenditure was calculated at 17,437,452.93 pesos. The *external debt* in the same year was:

4 per cent. external consolidated .....	£1,549,940
Müller & Thomson's loan.....	459,875
Total .....	£2,009,815

The *internal debt* was as follows:

Treasury notes in circulation .....	35,736.00 pesos.
Bonds and fractions of loan.....	1,466,839.88 "
Exhibition bonds .....	904,000.00 "
Guatemala Bank.....	300,000.00 "
Corporations and Companies.....	364,553.45 "
Deposits.....	112,964.14 "
Floating debt.....	541,452.5 " "
Bills payable .....	1,121,964.09 "
Salaries and expenses.....	2,472,945.55 "

Total ..... 7,319,955.66 pesos.

There were also national assets to the amount of 7,866.-737.07 pesos.

The value of the entire property of Guatemala was estimated not to be over 11,853,085 pesos.

Against this crushing line of figures the following list is given of the importations and exportations in pesos since 1851, which has a more favorable aspect:

Year.	Importation.	Exportation.	Year.	Importation.	Exportation.
1851	1,403,884	1,404,000	1873	1,191,830	2,364,265
1852	1,581,207	868,550	1874	3,054,004	2,300,621
1853	976,943	509,047	1875	2,585,738	3,717,344
1854	873,831	2,033,300	1876	2,716,704	3,767,471
1855	826,480	1,282,891	1877	3,133,871	3,773,188
1856	1,206,210	1,706,973	1878	3,238,497	3,918,912
1857	1,005,816	1,605,889	1879	2,929,464	4,605,643
1858	1,135,517	2,024,560	1880	3,065,536	4,425,386
1859	1,223,770	1,766,920	1881	3,664,674	4,084,348
1860	1,520,650	2,024,560	1882	2,652,042	3,719,209
1861	1,495,191	1,106,583	1883	2,030,893	5,718,341
1862	1,093,040	1,368,151	1884	3,829,630	4,937,941
1863	745,042	1,498,311	1885	3,103,277	6,063,045
1864	1,414,904	1,562,916	1886	3,937,899	6,719,502
1865	1,649,712	1,833,325	1887	4,241,407	9,039,391
1866	1,699,115	1,680,341	1888	5,459,568	7,239,977
1867	1,574,587	1,919,650	1889	7,586,661	13,247,689
1868	1,664,843	2,188,197	1890	7,639,833	14,401,534
1869	1,753,102	2,291,052	1891	7,806,730	14,175,392
1870	1,374,897	2,014,782	1892	6,010,233	14,869,324
1871	2,403,503	2,657,715	1893	6,383,834	20,327,077
1872	2,269,214	2,704,068			

The value of the imports is that estimated by the manufacturers, and the value of the exports is calculated at the ports, and includes transportation to them.

Continuing the information concerning the foreign commerce of Guatemala, these tables are given:

Exportations to the *United States of America* in 1896 were as follows:

Coffee,	.....	11,962,467 pounds.	Deer skins,	valued at	1,219 pesos.
Bananas,	valued at	69,361 pesos.	Living plants,	"	30 "
Minerals,	"	40 "	Zarzaparilla,	"	110 "
Corozo,	"	250 pesos.	Black beans,	"	4 "
Cowhides,	"	33,602 "	Tobacco,	"	408 "
Indian rubber,	"	25,025 "	Sundries,	"	910 "
Lumber,	"	85 "	Hardware,	"	240 "
Coined silver,	"	382,200 "			

At the same time there were exported to *Germany*, coffee amounting to 46,268,078 pounds; cowhides valued at 28,682 pesos; Indian rubber valued at 8,822 pesos; deer skins valued at 6,896 pesos; sundries valued at 1,310 pesos.

To *England*: Coffee amounting to 10,332,847 pounds; Indian rubber valued at 15,488 pesos; sundries valued at 435 pesos.

*To France:* Coffee, amounting to 1,585,563 pounds; coined silver valued at 22,000 pesos.

Other products for export are cinchona bark, of which, in 1893, there was sold a valuation of 3,740 pesos, and the rubber, called "*hule*" or "*caúchu*," of which, in 1893, a valuation of 38,898 pesos was sent abroad.

The production of rubber since 1860 has been as follows :

Year.	No. pounds.	Year.	No. pounds.	Year.	No. pounds.
1860	221,600	1873	390,200	1886	282,400
1861	292,500	1874	42,300	1887	323,400
1862	139,900	1879	1,800	1888	221,100
1863	278,500	1880	25,900	1889	169,700
1864	303,900	1881	188,100	1890	143,000
1870	278,500	1882	345,900	1891	142,200
1871	214,000	1883	345,400	1893	317,300
1872	327,100	1885	229,700		

Besides rubber, only the following *forest products*, mahogany, cedarwood, mora, campeche, brazilwood and some zarza-parilla and corozo (oilseeds) are exported.

The *United States of America* exported to Guatemala in the same year:

Articles.	Pesos	Articles.	Pesos.
Oils .....	31,976.40	Carved wood .....	24,120.60
Spirits .....	69,135.60	Lumber and building material	372,180.40
Barbed wire .....	28,960.00	Machinery .....	61,120.60
Cotton yarns .....	364,219.35	Material for railways and tele-	
Sundry articles .....	76,106.45	graphs .....	349,610.65
Bicycles .....	32,146.90	Furniture .....	20,460.40
Shoe material .....	8,916.75	Lard .....	21,210.60
Cinnamon and spices .....	19,126.30	Manufactures of leather and	
Carts .....	14,138.60	fur .....	30,110.45
Carriages .....	24,872.40	Other articles .....	51,034.10
Barley .....	19,496.65	Stationery .....	25,106.70
Bear .....	37,272.80	Potatoes and Indian corn .....	56,114.10
Preserves .....	82,430.60	Petroleum .....	47,102.40
Cement .....	15,462.40	Silk .....	68,106.40
Copper ware .....	31,881.10	Hats .....	14,260.20
Drugs and medicine .....	92,184.50	Grease .....	18,140.80
Buildings .....	58,110.60	Roofing .....	19,020.40
Cattle, horses, mules .....	45,960.00	Wheat .....	41,960.20
Flour .....	476,908.40	Tea .....	19,105.20
Iron ware .....	139,140.80	Wines and liquors .....	46,120.80
Iron in bars .....	21,360.40	Total exports .....	3,172,896.05
Wool .....	18,916.20		

The imports from *France* amounted in the same year to 1,196,849.40 pesos, as follows:

Spirits, brandy, etc.....	136,240.50	pesos.
Cotton (yarns, etc.).....	123,864.50	"
Sundry articles .....	74,601.45	"
Preserves.....	32,145.20	"
Glass and chinaware .....	14,176.21	"
Copper wares.....	23,635.40	"
Drugs and medicinie .....	36,205.40	"
Jewelry.....	31,284.60	"
Wool (yarns, cloth, clothing, etc.).....	210,160.20	"
Linen.....	14,210.40	"
Machinery .....	12,918.60	"
Manufactures of leather .....	12,630.40	"
Stationery.....	56,104.60	"
Pianos, organs, etc.....	21,116.40	"
Silks (yarns, cloth, ribbons, etc.) .....	89,746.20	"
Hats .....	29,310.69	"
Wine and liquors.....	112,190.20	"

The imports from

Italy . . . . .	amounted to . . . . .	167,762.30	pesos.
Spain.....	" "	142,738.55	"
Belgium.....	" "	57,017.35	"
South America.....	" "	50,078.90	"
<b>Mexico</b> .....	" "	46,081.75	"
Austria .....	" "	35,575.35	"
Japan.....	" "	35,072.60	"
China.....	" "	21,249.60	"
Switzerland .....	" "	18,023.60	"
Central America .....	" "	13,953.95	"
The Netherlands.....	" "	9,295.45	"

The imports from the *United Kingdom* were valued at 2,164,490.60 pesos, as follows:

Cotton yarns and cloth.....	1,286,840.50	pesos.
Sundry articles .....	41,410.50	"
Drugs and medicines .....	17,182.49	"
Iron wares .....	98,184.60	"
Woolen yarns and clothing.....	181,112.70	"
Linen (stockings, yarns, cloth, etc.).....	18,416.30	"
Tobacco and cigars.....	12,125.60	"
Roofing sheets.....	56,149.50	"
Machinery .....	26,140.80	"
Railways, telegraphs, electric lights, machinery .....	172,380.60	"
Leathers and furs .....	16,806.40	"
Sacks or bags .....	18,145.30	"
Silks, yarns, clothing, etc.....	34,105.70	"

The imports from *Germany* to Guatemala amounted to 2,012,269.40 pesos, as follows:

Spirits .....	16,954.20	pesos.
Barbed wire.....	18,976.40	"
Cotton yarns, etc.....	416,845.10	"
Sundry articles.....	73,401.65	"
Beer .....	51,284.80	"
Preserves .....	43,208.10	"
Glassware, chinaware.....	58,136.80	"
Coals.....	27,146.10	"
Drugs and medicines.....	34,106.50	"
Stearine .....	23,902.10	"
Matches.....	45,180.60	"
Iron ware .....	116,908.40	"
Iron in bars.....	22,214.10	"
Jewelry.....	23,190.40	"
Wool (yarns, cloth, clothing).....	186,810.46	"
Linen .....	18,360.80	"
Roofing sheets.....	51,230.20	"
Timber and roofing materials.....	31,180.40	"
Materials for railways, telegraphs.....	163,960.40	"
Furniture.....	24,295.20	"
Manufactures of leathers and furs.....	34,215.60	"
Other articles.....	152,101.70	"
Stationery .....	59,107.30	"
Pianos.....	15,120.50	"
Sacks.....	25,194.50	"
Silk (yarns, etc.).....	32,104.40	"
Hats.....	23,910.60	"
Roofs.....	18,945.20	"
Wines and liquors .....	23,160.80	"

The history of commerce in Guatemala is very simple.

During the first years of the present century, toward the end of the Spanish domination, after many restrictions to trade had been removed and Central America had obtained leave to traffic direct with Mexico and other Spanish-American colonies, there were only thirty or thirty-five mercantile houses throughout Central America. Merchandise to the value of \$1,000,000 was yearly imported from Spain through the Bay of Honduras. The returns were chiefly indigo, coin and bullion. There was some trade also with Peru and Cuba, and at the same time smuggling was carried on quite freely and largely through Belize and Curaçao on the Atlantic coast, and by foreign whalers on the Pacific coast.

After the separation from Spain there was, as Herbert Howe Bancroft says, little commerce for many years, until the construction of the railway across the Isthmus and the establishment of a line of steamers making periodical visits to the several Central American ports on the Pacific coast afforded facilities for the development of both agriculture and foreign trade. Up to that time the several republics had established regular fairs, and subsequently they added to their number. These were attended by persons wishing to purchase national

or foreign products and manufactures. In Guatemala annual fairs were held in Esquipulas, where large quantities of merchandise were sold; in Rabinal, in Verapaz, of dry goods; in Mazatenango, of dry goods, cacao, cattle, etc.; in San Pedro Ayampue, in Sololá, of dry goods, fruit and stock; in Quezaltenango and Chimaltenango, of woolen manufactures; also in the capital of Guatemala, in Salcajá, Santa Cruz del Quiché, Jalapa, Santa Rosa and San Pedro Pinula. In regard to the development of the commerce of Guatemala since 1851, we refer to the above copied lists of importations and exportations from 1851 to 1893. In order to understand the slow development of Guatemala, it should be mentioned that until the railroads were built the country was, to all intents and purposes, insular, and reached only by sea. The business centers, being all in the interior, were accessible only by difficult roads and horse paths. Her people lived mainly by themselves, and cared little for the outside world, and the outside world cared little for them.

This situation was much changed with the production of coffee as an article of export, and it can be said that all modern improvements and the present civilization are mostly due to coffee. With the accumulation of more wealth the standard of life was raised, and commerce rapidly increased.

In 1877 the first bank, the Banco Internacional, was established with a capital of .....	1,400,000 pesos.
And after that the Banco Colombiano with a capital of.....	1,684,000 "
The Banco de Occidente with a capital of.....	1,800,000 "
The Banco de Guatemala with a capital of.....	1,500,000 "
The Banco Agricola Hipotecario with a capital of.....	4,000,000 "
And the Banco Americano with a capital of .....	600,000 "

Credit is still dear in Guatemala, 10 to 12 per cent. interest being demanded; and it is generally alleged that the banks are not liberal in extending credits. Business is usually done on long credits. The merchants in the larger cities, with a capital of from 20,000 to 100,000 pesos, get usually a six, nine and twelve months' credit from European exporters, while the merchants of the interior, with a capital of from 4,000 to 12,000 pesos, and who generally handle the cheaper articles of all kinds, in accordance with the wealth of their customers, chiefly

Indian agriculturists and laborers, get from the wholesale dealers in the larger cities a six to nine months' credit, paying an interest of from 7 to 10 per cent. As may be inferred, most of the merchants deal in general merchandise, and the articles chiefly purchased are canned goods, cheaper grades of clothing and dress goods, dry goods, hardware, crockery, glassware, farming implements, household and decorative furniture, kitchen utensils and household articles, boots and shoes, hats, carpets, stationery, flour, butter, lard, etc., machinery for coffee cleaning, sugar making, mining, sawmills; also pumps, etc.

The larger houses are generally good and reliable. Many business houses are also proprietors of coffee plantations, and it happens that most of the imported merchandise is paid for with it. The commerce in coffee is mostly in the hands of Germans or German-Americans, who have also invested a great deal of their capital in coffee and sugar plantations. Besides German and American houses there are a number of Spanish, Italian, French and native houses all through the country.

*Industries.* The industries of Guatemala are still in their infancy. The principal ones are sugar factories, distilleries and establishments for cleaning and preparing coffee; then follow the industries mentioned in connection with the Indians, such as the weaving of maata (cotton cloth), of jerga (a coarse woolen stuff), cashmere, silk and cotton scarfs, huipiles, hats, ropes and cordage, pottery, baskets, artificial flowers, wax fruits, cigars, shoes, furniture, musical instruments, etc.

There is probably a profitable field for the establishment of all kinds of factories, which undoubtedly would be encouraged by the government. In order to get a concession or privilege for any enterprise, applications must be made to the government, and a contract to that effect signed by the applicant and the Minister of Fomento. In certain cases the approval of the President of the Republic is sufficient for their validity, while some contracts, like railroad concessions, must be submitted for the sanction of the legislative assembly.

## IX.

### **HISTORICAL SKETCH AND POLITICAL ORGANIZATION.**

Spain governed Central America by the Audiencia Real for about three centuries. There were several attempts at resistance and formal protests against her tyranny as early as 1811, but it was not until 1821 that the representative of Spain, Gavino Gainza, surrendered his authority, when, on the 15th of September, independence was proclaimed. Soon after Mexico made an attempt to annex Central America to the ephemeral empire of Iturbide, but that domination was never accepted. After that and up to the present a series of attempts have been made to confederate the Central American countries. In 1824 a federal constitution establishing the Republic of Central America was proclaimed. The union lasted until 1839, when it was dissolved, notwithstanding the strenuous efforts of numerous patriots headed by General Morazan.

Guatemala became, on the 17th of April, 1839, an independent republic, principally through the efforts of Rafael Carrera, who was proclaimed dictator on the 19th of March, 1840, elected President on the 11th of December, 1844, and President for life on the 21st of October, 1854. He governed the country in a successful manner until his death, which occurred on the 14th of April, 1865. After him General Vicente Cerna was elected President, and followed the policy of Carrera. He was overthrown in 1871 by the Liberal party, led by General Miguel Garcia Granados.

In 1873 he was succeeded by General J. Rufino Barrios, whose administration was very successful. He was killed in 1885 at the battle of Chalchuapa while attempting to establish by force a Central American union. From 1886 to 1892 General M. L. Barillas was President, followed by General J. M. Reyna Barrios who, after bringing his country into a heavy financial and economic as well as political crisis, fell at the hands of a murderer, on February 8th, 1898. The actual provisional President is the Licenciate, M. E. Cabrera.

*Political organization.* Guatemala is governed by a constitution sanctioned by the Constituent Assembly of 1879 and amended in 1885. Personal liberty is guaranteed by this code to the fullest extent, and no restrictions of any kind are placed upon the exercise of freedom of conscience and opinion. Public authorities are chosen by universal suffrage. Instruction at the public schools is free, and attendance upon them is compulsory. Military service is likewise obligatory, but exemption from it may be obtained only by paying a certain amount of money.

Foreigners are not obliged to pay any special imposts, or forced loans, nor are they liable to military service or acceptance of public employment. Civil marriage is established in the country, and public registries of property, births and deaths and of the social state of persons are kept by public functionaries.

The legislative, executive and judicial jurisdictions constitute the government of the country. The legislative power is vested in a House or Assembly, renewed every two years by halves. This Assembly appoints its own President, Vice-President and Secretaries. It meets on the 1st of March and its sessions last two months, but they may be extended for another thirty days. Congress may also be summoned to extra sessions, whenever urgent public business requires it.

Executive power is vested in a President who is elected directly by the people. His term of office runs for six years, and he is not eligible to succeed himself. He is assisted by the secretaries of six departments, who in some cases have a consolidated responsibility. These Secretaries are in charge of the Departments of Foreign Affairs, Interior Affairs and

Justice, Public Works, War, the Treasury, and Public Instruction.

The Judiciary is composed of a Chief-Justice and a Supreme Court, three Appellate Courts in the Capital, one in Quezaltenango and another in Jalapa, each one having its own Attorney-General. There are five courts of the first instance in Guatemala, three in Quezaltenango, two in San Marcos and one in each of the remaining nineteen Departments. In each municipality there is a Justice of the Peace.

The Council of State is an auxiliary body, for the advice of which the Government may call. It is formed of nine members, of five elected by the Assembly, and of four appointed by the Executive.

The Assembly appoints a permanent commission, which attends to all matters prescribed by the law, when the Assembly is not in session.

Each municipal territory established by law is administered by a council or corporation.

The government of each Department is exercised by a political chief, who is at the same time the commander of the local forces.

After the Liberal successes of 1871 the old codes were displaced by others more in accordance with the requirements of modern times. The code of civil and criminal procedure, and also the fiscal, military and commercial codes have been sanctioned and promulgated.

A police force was established years ago in Guatemala, Quezaltenango, Chiquimula, La Antigua, Jalapa, Amatitlan, Totonicapan and Retalhuleu. It is also intended to establish a force of rural guards for the highways.

The army is composed of about 500 commanding officers, 3,263 officers and 53,903 men.

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